



INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL  
TRAINING AT THE UNIVERSITY OF HELSINKI 2005–2010

# RC-Specific Evaluation of MNRP – Research Program of Molecular Neurology

Seppo Saari & Antti Moilanen (Eds.)



Evaluation Panel: Medicine, Biomedicine and Health Sciences



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University of Helsinki  
Administrative Publications 80/49  
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<b>Title:</b> International Evaluation of Research and Doctoral Training at the University of Helsinki 2005–2010 : RC-Specific Evaluation of MNRP – Research Program of Molecular Neurology	<b>Type of publication:</b> Evaluations
<b>Summary:</b> Researcher Community (RC) was a new concept of the participating unit in the evaluation. Participation in the evaluation was voluntary and the RCs had to choose one of the five characteristic categories to participate. Evaluation of the Researcher Community was based on the answers to the evaluation questions. In addition a list of publications and other activities were provided by the TUHAT system. The CWTS/Leiden University conducted analyses for 80 RCs and the Helsinki University Library for 66 RCs. Panellists, 49 and two special experts in five panels evaluated all the evaluation material as a whole and discussed the feedback for RC-specific reports in the panel meetings in Helsinki. The main part of this report is consisted of the feedback which is published as such in the report. Chapters in the report: 1. Background for the evaluation 2. Evaluation feedback for the Researcher Community 3. List of publications 4. List of activities 5. Bibliometric analyses The level of the RCs' success can be concluded from the written feedback together with the numeric evaluation of four evaluation questions and the category fitness. More conclusions of the success can be drawn based on the University-level report.	
<b>RC-specific information:</b>	
<b>Main scientific field of research:</b> Medicine, Biomedicine and Health Sciences	<b>RC-specific keywords:</b> Mitochondrial disease, mitochondrial function, neurodegeneration, stem cells, metabolic disease, stroke, inherited diseases, neuropsychiatry
<b>Participation category:</b> 1. Research of the participating community represents the international cutting edge in its field	
<b>RC's responsible person:</b> Wartiovaara, Anu	
<b>Keywords:</b> Research Evaluation, Meta-evaluation, Doctoral Training, Bibliometric Analyses, Researcher Community	

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## Foreword

The evaluation of research and doctoral training is being carried out in the years 2010–2012 and will end in 2012. The steering group appointed by the Rector in January 2010 set the conditions for participating in the evaluation and prepared the Terms of Reference to present the evaluation procedure and criteria. The publications and other scientific activities included in the evaluation covered the years 2005–2010.

The participating unit in the evaluation was defined as a Researcher Community (RC). To obtain a critical mass with university-level impact, the number of members was set to range from 20 to 120. The RCs were required to contain researchers in all stages of their research career, from doctoral students to principal investigators (PIs). All in all, 136 Researcher Communities participated in this voluntary evaluation, 5857 persons in total, of whom 1131 were principal investigators. PIs were allowed to participate in two communities in certain cases, and 72 of them used this opportunity and participated in two RCs.

This evaluation enabled researchers to define RCs from the “bottom up” and across disciplines. The aim of the evaluation was not to assess individual performance but a community with shared aims and researcher-training activities. The RCs were able to choose among five different categories that characterised the status and main aims of their research. The steering group considered the process of applying to participate in the evaluation to be important, which led to the establishment of these categories. In addition, providing a service for the RCs to enable them to benchmark their research at the global level was a main goal of the evaluation.

The data for the evaluation consisted of the RCs’ answers to evaluation questions on supplied e-forms and a compilation extracted from the TUHAT – Research Information System (RIS) on 12 April 2011. The compilation covered scientific and other publications as well as certain areas of scientific activities. During the process, the RCs were asked to check the list of publications and other scientific activities and make corrections if needed. These TUHAT compilations are public and available on the evaluation project sites of each RC in the TUHAT-RIS.

In addition to the e-form and TUHAT compilation, University of Leiden (CWTS) carried out bibliometric analyses from the articles included in the Web of Science (WoS). This was done on University and RC levels. In cases where the publication forums of the RC were clearly not represented by the WoS data, the Library of the University of Helsinki conducted a separate analysis of the publications. This was done for 66 RCs representing the humanities and social sciences.

The evaluation office also carried out an enquiry targeted to the supervisors and PhD candidates about the organisation of doctoral studies at the University of Helsinki. This and other documents describing the University and the Finnish higher education system were provided to the panellists.

The panel feedback for each RC is unique and presented as an entity. The first collective evaluation reports available for the whole panel were prepared in July–August 2011. The reports were accessible to all panel members via the electronic evaluation platform in August. Scoring from 1 to 5 was used to complement written feedback in association with evaluation questions 1–4 (scientific focus and quality, doctoral training, societal impact, cooperation) and in addition to the category evaluating the fitness for participation in the evaluation. Panellists used the international level as a point of comparison in the evaluation. Scoring was not expected to go along with a preset deviation.

Each of the draft reports were discussed and dealt with by the panel in meetings in Helsinki (from 11 September to 13 September or from 18 September to 20 September 2011). In these meetings the panels also examined the deviations among the scores and finalised the draft reports together.

The current RC-specific report deals shortly with the background of the evaluation and the terms of participation. The main evaluation feedback is provided in the evaluation report, organised according to the evaluation questions. The original material provided by the RCs for the panellists has been attached to these documents.

On behalf of the evaluation steering group and office, I sincerely wish to thank you warmly for your participation in this evaluation. The effort you made in submitting the data to TUHAT-RIS is gratefully acknowledged by the University. We wish that you find this panel feedback useful in many ways. The bibliometric profiles may open a new view on your publication forums and provide a perspective for discussion on your choice of forums. We especially hope that this evaluation report will help you in setting the future goals of your research.

Johanna Björkroth  
Vice-Rector  
Chair of the Steering Group of the Evaluation

#### **Steering Group of the evaluation**

Steering group, nominated by the Rector of the University, was responsible for the planning of the evaluation and its implementation having altogether 22 meetings between February 2010 and March 2012.

#### **Chair**

Vice-Rector, professor **Johanna Björkroth**

#### **Vice-Chair**

Professor **Marja Airaksinen**

Chief Information Specialist, Dr **Maria Forsman**

Professor **Arto Mustajoki**

University Lecturer, Dr **Kirsi Pyhälä**

Director of Strategic Planning and Development, Dr **Ossi Tuomi**

Doctoral candidate, MSocSc **Jussi Vauhkonen**



# Panel members

## **CHAIR**

### **Professor Lorenz Poellinger**

Cancer biology, cell and molecular biology  
Karolinska Institute, Sweden

## **VICE-CHAIR**

### **Professor Cornelia van Duijn**

Genetic epidemiology, Alzheimer's disease and related disorders  
Erasmus Medical Centre, the Netherlands

### **Professor Johanna Ivaska**

Molecular cell biology, cell adhesion, cancer biology  
University of Turku, VTT Technical Research Centre, Finland

### **Professor Olli Lassila**

Immunology, medical microbiology  
University of Turku, Finland

### **Professor Hans-Christian Pape**

Neuroscience, neurophysiology  
University of Münster, Germany

### **Professor Thomas Ruzicka**

Dermatology, allergology  
Ludwig-Maximilians-Universität (LMU) München, Germany

### **Professor Lars Terenius**

Experimental alcohol and drug dependence research, mental disorders,  
preventive medicine  
Karolinska Institute, Sweden

### **Professor Peter York**

Physical pharmaceuticals, pharmaceutical chemistry, pharmaceutical  
technology  
University of Bradford, Great Britain

The panel, independently, evaluated all the submitted material and was responsible for the feedback of the RC-specific reports. The panel members were asked to confirm whether they had any conflict of interests with the RCs. If this was the case, the panel members disqualified themselves in discussion and report writing.

Added expertise to the evaluation was contributed by two evaluators outside the panels and by three members from the other panels.

## **External Experts**

### **Professor Olli Carpén**

Pathology, cancer cell metastasis  
University of Turku  
Finland

### **Professor Anders Linde**

Oral biochemi  
Faculty of Odontology  
Göteborg University  
Sweden

### **Experts from the Other Panels**

**Professor Jan-Otto Carlsson**, from the Panel of Natural Sciences

**Professor Danny Huylebroek**, from the Panel of Biological, Agricultural and Veterinary Sciences

**Professor Holger Stark**, from the Panel of Natural Sciences

### **EVALUATION OFFICE**

**Dr Seppo Saari, Doc.**, Senior Adviser in Evaluation, was responsible for the entire evaluation, its planning and implementation and acted as an Editor-in-chief of the reports.

**Dr Eeva Sievi, Doc.**, Adviser, was responsible for the registration and evaluation material compilations for the panellists. She worked in the evaluation office from August 2010 to July 2011.

**MSocSc Paula Ranne**, Planning Officer, was responsible for organising the panel meetings and all the other practical issues like agreements and fees and editing a part the RC-specific reports. She worked in the evaluation office from March 2011 to January 2012.

**Mr Antti Moilanen**, Project Secretary, was responsible for editing the reports. He worked in the evaluation office from January 2012 to April 2012.

### **TUHAT OFFICE**

#### **Provision of the publication and other scientific activity data**

**Mrs Aija Kaitera**, Project Manager of TUHAT-RIS served the project ex officio providing the evaluation project with the updated information from TUHAT-RIS. The TUHAT office assisted in mapping the publications with CWTS/University of Leiden.

**MA Liisa Ekebom**, Assisting Officer, served in TUHAT-RIS updating the publications for the evaluation. She also assisted the UH/Library analyses.

**BA Liisa Jäppinen**, Assisting Officer, served in TUHAT-RIS updating the publications for the evaluation.

### **HELSINKI UNIVERSITY LIBRARY**

#### **Provision of the publication analyses**

**Dr Maria Forsman**, Chief Information Specialist in the Helsinki University Library, managed with her 10 colleagues the bibliometric analyses in humanities, social sciences and in other fields of sciences where CWTS analyses were not applicable.

## **Acronyms and abbreviations applied in the report**

### **External competitive funding**

AF – Academy of Finland  
TEKES - Finnish Funding Agency for Technology and Innovation  
EU - European Union  
ERC - European Research Council  
International and national foundations  
FP7/6 etc. /Framework Programmes/Funding of European Commission

### **Evaluation marks**

Outstanding (5)  
Excellent (4)  
Very Good (3)  
Good (2)  
Sufficient (1)

### **Abbreviations of Bibliometric Indicators**

P - Number of publications  
TCS – Total number of citations  
MCS - Number of citations per publication, excluding self-citations  
PNC - Percentage of uncited publications  
MNCS - Field-normalized number of citations per publication  
MNJS - Field-normalized average journal impact  
THCP10 - Field-normalized proportion highly cited publications (top 10%)  
INT\_COV - Internal coverage, the average amount of references covered by the WoS  
WoS – Thomson Reuters Web of Science Databases

### **Participation category**

Category 1. The research of the participating community represents the international cutting edge in its field.  
Category 2. The research of the participating community is of high quality, but the community in its present composition has yet to achieve strong international recognition or a clear break-through.  
Category 3. The research of the participating community is distinct from mainstream research, and the special features of the research tradition in the field must be considered in the evaluation.  
Category 4. The research of the participating community represents an innovative opening.  
Category 5. The research of the participating community has a highly significant societal impact.

### **Research focus areas of the University of Helsinki**

Focus area 1: The basic structure, materials and natural resources of the physical world  
Focus area 2: The basic structure of life  
Focus area 3: The changing environment – clean water  
Focus area 4: The thinking and learning human being  
Focus area 5: Welfare and safety  
Focus area 6: Clinical research  
Focus area 7: Precise reasoning  
Focus area 8: Language and culture  
Focus area 9: Social justice  
Focus area 10: Globalisation and social change



# 1 Introduction to the Evaluation

## 1.1 RC-specific evaluation reports

The participants in the evaluation of research and doctoral training were Researcher Communities (hereafter referred to as the RC). The RC refers to the group of researchers who registered together in the evaluation of their research and doctoral training. Preconditions in forming RCs were stated in the Guidelines for the Participating Researcher Communities. The RCs defined themselves whether their compositions should be considered well-established or new.

It is essential to emphasise that the evaluation combines both meta-evaluation<sup>1</sup> and traditional research assessment exercise and its focus is both on the research outcomes and procedures associated with research and doctoral training. The approach to the evaluation is enhancement-led where self-evaluation constituted the main information. The answers to the evaluation questions formed together with the information of publications and other scientific activities an entity that was to be reviewed as a whole.

The present evaluation recognizes and justifies the diversity of research practices and publication traditions. Traditional Research Assessment Exercises do not necessarily value high quality research with low volumes or research distinct from mainstream research. It is challenging to expose the diversity of research to fair comparison. To understand the essence of different research practices and to do justice to their diversity was one of the main challenges of the present evaluation method. Understanding the divergent starting points of the RCs demanded sensitivity from the evaluators.

## 1.2 Aims and objectives in the evaluation

The aims of the evaluation are as follows:

- to improve the level of research and doctoral training at the University of Helsinki and to raise their international profile in accordance with the University's strategic policies. The improvement of doctoral training should be compared to the University's policy.<sup>2</sup>
- to enhance the research conducted at the University by taking into account the diversity, originality, multidisciplinary nature, success and field-specificity,
- to recognize the conditions and prerequisites under which excellent, original and high-impact research is carried out,
- to offer the academic community the opportunity to receive topical and versatile international peer feedback,
- to better recognize the University's research potential.
- to exploit the University's TUHAT research information system to enable transparency of publishing activities and in the production of reliable, comparable data.

## 1.3 Evaluation method

The evaluation can be considered as an enhancement-led evaluation. Instead of ranking, the main aim is to provide useful information for the enhancement of research and doctoral training of the participating RCs. The comparison should take into account each field of science and acknowledge their special character.

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<sup>1</sup> The panellists did not read research reports or abstracts but instead, they evaluated answers to the evaluation questions, tables and compilations of publications, other scientific activities, bibliometrics or comparable analyses.

<sup>2</sup> [Policies on doctoral degrees and other postgraduate degrees at the University of Helsinki.](#)

The comparison produced information about the present status and factors that have lead to success. Also challenges in the operations and outcomes were recognized.

The evaluation approach has been designed to recognize better the significance and specific nature of researcher communities and research areas in the multidisciplinary top-level university. Furthermore, one of the aims of the evaluation is to bring to light those evaluation aspects that differ from the prevalent ones. Thus the views of various fields of research can be described and research arising from various starting points understood better. The doctoral training is integrated into the evaluation as a natural component related to research. Operational processes of doctoral training are being examined in the evaluation.

**Five stages of the evaluation method were:**

1. Registration – Stage 1
2. Self-evaluation – Stage 2
3. TUHAT<sup>3</sup> compilations on publications and other scientific activities<sup>4</sup>
4. External evaluation
5. Public reporting

## **1.4 Implementation of the external evaluation**

### **Five Evaluation Panels**

Five evaluation panels consisted of independent, renowned and highly respected experts. The main domains of the panels are:

1. biological, agricultural and veterinary sciences
2. medicine, biomedicine and health sciences
3. natural sciences
4. humanities
5. social sciences

The University invited 10 renowned scientists to act as chairs or vice-chairs of the five panels based on the suggestions of faculties and independent institutes. Besides leading the work of the panel, an additional role of the chairs was to discuss with other panel chairs in order to adopt a broadly similar approach. The panel chairs and vice-chairs had a pre-meeting on 27 May 2011 in Amsterdam.

The panel compositions were nominated by the Rector of the University 27 April 2011. The participating RCs suggested the panel members. The total number of panel members was 50. The reason for a smaller number of panellists as compared to the previous evaluations was the character of the evaluation as a meta-evaluation. The panellists did not read research reports or abstracts but instead, they evaluated answers to the evaluation questions, tables and compilations of publications, other scientific activities, bibliometrics and comparable analyses.

The panel meetings were held in Helsinki:

- On 11–13 September 2011: (1) biological, agricultural and veterinary sciences, (2) medicine, biomedicine and health sciences and (3) natural sciences.
- On 18–20 September 2011: (4) humanities and (5) social sciences.

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<sup>3</sup> TUHAT (acronym) of Research Information System (RIS) of the University of Helsinki

<sup>4</sup> Supervision of thesis, prizes and awards, editorial work and peer reviews, participation in committees, boards and networks and public appearances.

## 1.5 Evaluation material

The main material in the evaluation was the RCs' self-evaluations that were qualitative in character and allowed the RCs to choose what was important to mention or emphasise and what was left unmentioned.

The present evaluation is exceptional at least in the Finnish context because it is based on both the evaluation documentation (self-evaluation questions, publications and other scientific activities) and the bibliometric reports. All documents were delivered to the panellists for examination.

Traditional bibliometrics can be reasonably done mainly in medicine, biosciences and natural sciences when using the Web of Science database, for example. Bibliometrics, provided by CWTS/The Centre for Science and Technology Studies, University of Leiden, cover only the publications that include WoS identification in the TUHAT-RIS.

Traditional bibliometrics are seldom relevant in humanities and social sciences because the international comparable databases do not store every type of high quality research publications, such as books and monographs and scientific journals in other languages than English. The Helsinki University Library has done analysis to the RCs, if their publications were not well represented in the Web of Science databases (RCs should have at least 50 publications and internal coverage of publications more than 40%) – it meant 58 RCs. The bibliometric material for the evaluation panels was available in June 2011. The RC-specific bibliometric reports are attached at the end of each report.

The panels were provided with the evaluation material and all other necessary background information, such as the basic information about the University of Helsinki and the Finnish higher education system.

### Evaluation material

1. Registration documents of the RCs for the background information
2. Self evaluation material – answers to the evaluation questions
3. Publications and other scientific activities based on the TUHAT RIS:
  - 3.1. statistics of publications
  - 3.2. list of publications
  - 3.3. statistics of other scientific activities
  - 3.4. list of other scientific activities
4. Bibliometrics and comparable analyses:
  - 4.1. Analyses of publications based on the verification of TUHAT-RIS publications with the Web of Science publications (CWTS/University of Leiden)
  - 4.2. Publication statistics analysed by the Helsinki University Library - mainly for humanities and social sciences
5. University level survey on doctoral training (August 2011)
6. University level analysis on publications 2005–2010 (August 2011) provided by CWTS/University of Leiden

### Background material

#### University of Helsinki

- [Basic information about the University of the Helsinki](#)
- [The structure of doctoral training at the University of Helsinki](#)
- Previous evaluations of research at the University of Helsinki – links to the reports: [1998](#) and [2005](#)

#### The Finnish Universities/Research Institutes

- [Finnish University system](#)
- [Evaluation of the Finnish National Innovation System](#)
- [The State and Quality of Scientific Research in Finland. Publication of the Academy of Finland 9/09.](#)

The evaluation panels were provided also with other relevant material on request before the meetings in Helsinki.

## 1.6 Evaluation questions and material

The participating RCs answered the following evaluation questions which are presented according to the evaluation form. In addition, TUHAT RIS was used to provide the **additional material** as explained. For giving the feedback to the RCs, the panellists received the evaluation feedback form constructed in line with the evaluation questions:

### 1. Focus and quality of the RC's research

- Description of
  - the RC's research focus.
  - the quality of the RC's research (incl. key research questions and results)
  - the scientific significance of the RC's research in the research field(s)
- Identification of the ways to strengthen the focus and improve the quality of the RC's research

The additional material: TUHAT compilation of the RC's publications, analysis of the RC's publications data (provided by University of Leiden and the Helsinki University Library)

A written feedback from the aspects of: scientific quality, scientific significance, societal impact, innovativeness

- Strengths
- Areas of development
- Other remarks
- Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

### 2. Practises and quality of doctoral training

- Organising of the doctoral training in the RC. Description of the RC's principles for:
  - recruitment and selection of doctoral candidates
  - supervision of doctoral candidates
  - collaboration with faculties, departments/institutes, and potential graduate schools/doctoral programmes
  - good practises and quality assurance in doctoral training
  - assuring of good career perspectives for the doctoral candidates/fresh doctorates
- Identification of the RC's strengths and challenges related to the practises and quality of doctoral training, and the actions planned for their development.

The additional material: TUHAT compilation of the RC's other scientific activities/supervision of doctoral dissertations

A written feedback from the aspects of: processes and good practices related to leadership and management

- Strengths
- Areas of development
- Other remarks
- Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

### 3. The societal impact of research and doctoral training

- Description on how the RC interacts with and contributes to the society (collaboration with public, private and/or 3rd sector).
- Identification of the ways to strengthen the societal impact of the RC's research and doctoral training.

The additional material: TUHAT compilation of the RC's other scientific activities.

A written feedback from the aspects of: societal impact, national and international collaboration, innovativeness

- Strengths
- Areas of development
- Other remarks
- Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)



#### **4. International and national (incl. intersectoral) research collaboration and researcher mobility**

- Description of
  - the RC's research collaborations and joint doctoral training activities
  - how the RC has promoted researcher mobility
- Identification of the RC's strengths and challenges related to research collaboration and researcher mobility, and the actions planned for their development.

A written feedback from the aspects of: scientific quality, national and international collaboration

- Strengths
- Areas of development
- Other remarks
- Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

#### **5. Operational conditions**

- Description of the operational conditions in the RC's research environment (e.g. research infrastructure, balance between research and teaching duties).
- Identification of the RC's strengths and challenges related to operational conditions, and the actions planned for their development.

A written feedback from the aspects of: processes and good practices related to leadership and management

- Strengths
- Areas of development
- Other remarks
- Recommendations

#### **6. Leadership and management in the researcher community**

- Description of
  - the execution and processes of leadership in the RC
  - how the management-related responsibilities and roles are distributed in the RC
  - how the leadership- and management-related processes support
    - high quality research
    - collaboration between principal investigators and other researchers in the RC
    - the RC's research focus
    - strengthening of the RC's know-how
- Identification of the RC's strengths and challenges related to leadership and management, and the actions planned for developing the processes

#### **7. External competitive funding of the RC**

- The RCs were asked to provide information of such external competitive funding, where:
  - the funding decisions have been made during 1.1.2005-31.12.2010, and
  - the administrator of the funding is/has been the University of Helsinki
- On the e-form the RCs were asked to provide:
  - 1) The relevant funding source(s) from a given list (Academy of Finland/Research Council, TEKES/The Finnish Funding Agency for Technology and Innovation, EU, ERC, foundations, other national funding organisations, other international funding organisations), and
  - 2) The total sum of funding which the organisation in question had decided to allocate to the RCs members during 1.1.2005-31.12.2010.

Competitive funding reported in the text is also to be considered when evaluating this point.

A written feedback from the aspects of: scientific quality, scientific significance, societal impact, innovativeness, future significance

- Strengths
- Areas of development
- Other remarks
- Recommendations

#### **8. The RC's strategic action plan for 2011-2013**

- RC's description of their future perspectives in relation to research and doctoral training.

A written feedback from the aspects of: scientific quality, scientific significance, societal impact, processes and good practices related to leadership and management, national and international collaboration, innovativeness, future significance

- Strengths
- Areas of development

- Other remarks
- Recommendations

## 9. Evaluation of the category of the RC in the context of entity of the evaluation material (1-8)

The RC's fitness to the chosen participation category

A written feedback evaluating the RC's fitness to the chosen participation category

- Strengths
- Areas of development
- Other remarks
- Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

## 10. Short description of how the RC members contributed the compilation of the stage 2 material

Comments on the compilation of evaluation material

## 11. How the UH's focus areas are presented in the RC's research?

Comments if applicable

## 12. RC-specific main recommendations based on the previous questions 1-11

## 13. RC-specific conclusions

# 1.7 Evaluation criteria

The panellists were expected to give evaluative and analytical feedback to each evaluation question according to their aspects in order to describe and justify the quality of the submitted material. In addition, the evaluation feedback was asked to be pointed out the level of the performance according to the following classifications:

- outstanding (5)
- excellent (4)
- very good (3)
- good (2)
- sufficient (1)

Evaluation according to the criteria was to be made with thorough consideration of the entire evaluation material of the RC in question. Finally, in questions 1-4 and 9, the panellists were expected to classify their written feedback into one of the provided levels (the levels included respective descriptions, 'criteria'). Some panels used decimals in marks. The descriptive level was interpreted according to the integers and not rounding up the decimals by the editors.

## Description of criteria levels

### Question 1 – FOCUS AND QUALITY OF THE RC'S RESEARCH

#### Classification: Criteria (level of procedures and results)

#### Outstanding quality of procedures and results (5)

Outstandingly strong research, also from international perspective. Attracts great international interest with a wide impact, including publications in leading journals and/or monographs published by leading international publishing houses. The research has world leading qualities. The research focus, key research questions scientific significance, societal impact and innovativeness are of outstanding quality.

*In cases where the research is of a national character and, in the judgement of the evaluators, should remain so, the concepts of "international attention" or "international impact" etc. in the grading criteria above may be replaced by "international comparability".*

Operations and procedures are of outstanding quality, transparent and shared in the community. The improvement of research and other efforts are documented and operations and practices are in alignment with the documentation. The ambition to develop the community together is of outstanding quality.

#### **Excellent quality of procedures and results (4)**

Research of excellent quality. Typically published with great impact, also internationally. Without doubt, the research has a leading position in its field in Finland.

Operations and procedures are of excellent quality, transparent and shared in the community. The improvement of research and other efforts are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of excellent quality.

#### **Very good quality of procedures and results (3)**

The research is of such very good quality that it attracts wide national and international attention.

Operations and procedures are of very good quality, transparent and shared in the community. The improvement of research and other efforts are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of very good quality.

#### **Good quality of procedures and results (2)**

Good research attracting mainly national attention but possessing international potential, extraordinarily high relevance may motivate good research.

Operations and procedures are of good quality, shared occasionally in the community. The improvement of research and other efforts are occasionally documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of good quality.

#### **Sufficient quality of procedures and results (1)**

In some cases the research is insufficient and reports do not gain wide circulation or do not have national or international attention. Research activities should be revised.

Operations and procedures are of sufficient quality, shared occasionally in the community. The improvement of research and other efforts are occasionally documented and operations and practices are to some extent in alignment with the documentation. The ambition to develop the community together is of sufficient quality.

### **Question 2 – DOCTORAL TRAINING**

### **Question 3 – SOCIETAL IMPACT**

### **Question 4 – COLLABORATION**

#### **Classification: Criteria (level of procedures and results)**

#### **Outstanding quality of procedures and results (5)**

Procedures are of outstanding quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and management are documented and operations and practices are in alignment with the documentation. The ambition to develop the community together is of outstanding quality. The procedures and results are regularly evaluated and the feedback has an effect on the planning.

#### **Excellent quality of procedures and results (4)**

Procedures are of excellent quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and management are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of excellent quality. The procedures and outcomes are evaluated and the feedback has an effect on the planning.

#### **Very good quality of procedures and results (3)**

Procedures are of very good quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and

management are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of very good quality.

#### **Good quality of procedures and results (2)**

Procedures are of good quality, shared occasionally in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and management are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of good quality.

#### **Sufficient quality of procedures and results (1)**

Procedures are of sufficient quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and management are occasionally documented and operations and practices are to some extent in alignment with the documentation. The ambition to develop the community together is of sufficient quality.

### **Question 9 – CATEGORY**

Participation category – fitness for the category chosen

The choice and justification for the chosen category below should be reflected in the RC's responses to the evaluation questions 1–8.

1. *The research of the participating community represents the international cutting edge in its field.*
2. *The research of the participating community is of high quality, but the community in its present composition has yet to achieve strong international recognition or a clear break-through.*
3. *The research of the participating community is distinct from mainstream research, and the special features of the research tradition in the field must be considered in the evaluation.* The research is of high quality and has great significance and impact in its field. However, the generally used research evaluation methods do not necessarily shed sufficient light on the merits of the research.
4. *The research of the participating community represents an innovative opening.* A new opening can be an innovative combination of research fields, or it can be proven to have a special social, national or international demand or other significance. Even if the researcher community in its present composition has yet to obtain proof of international success, its members can produce convincing evidence of the high level of their previous research.
5. *The research of the participating community has a highly significant societal impact.* The participating researcher community is able to justify the high social significance of its research. The research may relate to national legislation, media visibility or participation in social debate, or other activities promoting social development and human welfare. In addition to having societal impact, the research must be of a high standard.

#### **An example of outstanding fitness for category choice (5) <sup>5</sup>**

The RC's representation and argumentation for the chosen category were convincing. The RC recognized its real capacity and apparent outcomes in a wider context to the research communities. The specific character of the RC was well-recognized and well stated in the responses. The RC fitted optimally for the category.

- Outstanding (5)
- Excellent (4)
- Very good (3)
- Good (2)
- Sufficient (1)

The above-mentioned definition of outstanding was only an example in order to assist the panellists in the positioning of the classification. There was no exact definition for the category fitness.

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<sup>5</sup> The panels discussed the category fitness and made the final conclusions of the interpretation of it.

## 1.8 Timetable of the evaluation

The main timetable of the evaluation:

- |  |                       |
|--|-----------------------|
| 1. Registration                            | November 2010         |
| 2. Submission of self-evaluation materials | January–February 2011 |
| 3. External peer review                    | May–September 2011    |
| 4. Published reports                       | March–April 2012      |
| - University level public report           |                       |
| - RC specific reports                      |                       |

The entire evaluation was implemented during the university's strategy period 2010–2012. The preliminary results were available for the planning of the following strategy period in late autumn 2011. The evaluation reports will be published in March/April 2012. More detailed time schedule is published in the University report.

## 1.9 Evaluation feedback – consensus of the entire panel

The panellists evaluated all the RC-specific material before the meetings in Helsinki and mailed the draft reports to the evaluation office. The latest interim versions were on-line available to all the panellists on the Wiki-sites. In September 2011, in Helsinki the panels discussed the material, revised the first draft reports and decided the final numeric evaluation. After the meetings in Helsinki, the panels continued working and finalised the reports before the end of November 2011. The final RC-specific reports are the consensus of the entire panel.

The evaluation reports were written by the panels independently. During the editing process, the evaluation office requested some clarifications from the panels when necessary. The tone and style in the reports were not harmonized in the editing process. All the reports follow the original texts written by the panels as far as it was possible.

The original evaluation material of the RCs, provided for the panellists is attached at the end of the report. It is essential to notice that the exported lists of publications and other scientific activities depend how the data was stored in the TUHAT-RIS by the RCs.



## 2 Evaluation feedback

### 2.1 Focus and quality of the RC's research

- *Description of*
    - *the RC's research focus*
    - *the quality of the RC's research (incl. key research questions and results)*
    - *the scientific significance of the RC's research in the research field(s)*
  - *Identification of the ways to strengthen the focus and improve the quality of the RC's research*
- ASPECTS: Scientific quality, scientific significance, societal impact, innovativeness*

This community comprises eight individual groups. It has an interesting history. The nucleus is a collaborative program set up by Wartiovaara, Tienari and Lindsberg, followed by recruitment from abroad of two new group leaders, Hovatta and Battersby all focusing on neurologic/neuropsychiatric disorders. Complementary recruitments of two experts in mitochondrial medicine (Tyni and Eriksson) and finally Otonkoski, stem cell biology has completed the group with four more senior PIs and four junior. The new recruitments have apparently been successfully integrated, although overlapping with the neurologic/psychiatric issues is not always prominent. The diversity is to an extent beneficial but by experience integration is a slow process in a competitive landscape.

The **focus area** is explicitly stated as clinical science, although most of the work is on cells or in animal models. The dominant foci are on mitochondrial dynamics, proteases, oxidation defects/dysfunction in human disorders (4 groups: Battersby, Eriksson, Tyni, Wartiovaara), complemented by a rather wide spectrum of research involving genetic regulation of psychiatric disorders (Hovatta), pathophysiology of cerebrovascular diseases (Lindsberg), cell biology of stem cells related to beta-cell biology and diabetes (Otonkoski), genetics of neurodegeneration/demyelination (Tienari). The initiative to bring in the Stem Cell Unit into the program should receive special attention since isolation of fibroblasts from patients is becoming a valuable asset in identification of biomarkers. Complementation of the group through recruitment of foreign scientists is an important step since inbreeding is clearly negative.

The overall publication **output** of MNRP is excellent, given the recent establishment of most of the groups and the size of the RC. There is an average of around 40 publications/year, with a vast majority (>50%) in very good journals (IF>5) of molecular neuroscience/neurology/neurogenetics, high-lighted by 11 papers in top rank journals (Nature/clones, PLoS Med, Lancet Neurol). It is evident that some of the high rank papers result from pre-RC work of the members and/or from collaborative approaches. It can be foreseen that this high quality research can be maintained in the current excellent research environment and thereby contribute to development of this RC into one of high international visibility.

The RC has the potential and willingness to provide a strong basis for translational research. Unfortunately, it is unclear to what extent scientists in the program have a clinical background. The reported low and even lessening interest in research at the clinical departments is a worrying phenomenon. We suggest joint discussions with the academic and health care providers to strengthen the links. Finland should have ideal possibilities for translational research and we strongly encourage rectification of what seems a missing opportunity.

**Numeric evaluation: 4 (Excellent)**

### 2.2 Practises and quality of doctoral training

- *Organising of the doctoral training in the RC. Description of the RC's principles for:*
  - *recruitment and selection of doctoral candidates*
  - *supervision of doctoral candidates*

- *collaboration with faculties, departments/institutes, and potential graduate schools/doctoral programmes*
- *good practises and quality assurance in doctoral training*
- *assuring of good career perspectives for the doctoral candidates/fresh doctorates*
- *Identification of the RC's strengths and challenges related to the practises and quality of doctoral training, and the actions planned for their development.*
- *Additional material: TUHAT compilation of the RC's other scientific activities/supervision of doctoral dissertations*

**ASPECTS:** *Processes and good practices related to leadership and management*

The recruitment of students seems to work well and their commitment is thriving in the interactive environment. It is, however, not clear how many students have an MD or at least some medical background, and whether those who are in clinical practice get undisturbed time for research. In addition, existence of a dedicated, structured PhD or MD-PhD program (i.e. Molecular Neurology) with certified program elements (credit points) is not clear from the information provided.

Recruitment of “the best” students seem to be hampered by lack of career options and high administrative burden. These points should be rectified.

**Numeric evaluation: 4 (Excellent)**

## 2.3 The societal impact of research and doctoral training

- *Description on how the RC interacts with and contributes to the society (collaboration with public, private and/or 3rd sector).*
- *Identification of the ways to strengthen the societal impact of the RC's research and doctoral training.*
- *Additional material: TUHAT compilation of the RC's other scientific activities.*

**ASPECTS:** *Societal impact, national and international collaboration, innovativeness*

The RC has been very active in popularizing science. The program runs several meetings directed to the general public. Staff contributes to periodicals directed to the medical community and interest groups (physicians and patients organizations) with information on research news. This is an excellent example on how scientific matters are popularized. Website?

**Numeric evaluation: 4 (Excellent)**

## 2.4 International and national (incl. intersectoral) research collaboration and researcher mobility

- *Description of*
  - *the RC's research collaborations and joint doctoral training activities*
  - *how the RC has promoted researcher mobility*
- *Identification of the RC's strengths and challenges related to research collaboration and researcher mobility, and the actions planned for their development.*

**ASPECTS:** *Scientific quality, national and international collaboration*

This program has shown foresight in recruitments that have enriched the knowledge base. This is highly commendable and should be encouraged, for instance with contacts with the foreign research arenas. A valuable resource for increasing international input is the homecoming scientists who after several years (successful) post doc master new technologies and bring home contacts. We notice the difficulties of supporting young scientists and we emphasize the duty of university to keep these valuable recruits to faculty. Homecomers should be given the chance to start their own projects and not return to the safe haven of their former supervisors.



The RC is highly networked nationally and internationally, indicated by a high number of publications from collaborations, participation to several EU networks (SAVEBETA, ESTOOLS, LIV-ES, SYSGENET COSAT), and NIH and ALS funding.

**Numeric evaluation: 4 (Excellent)**

## 2.5 Operational conditions

- *Description of the operational conditions in the RC's research environment (e.g. research infrastructure, balance between research and teaching duties).*
- *Identification of the RC's strengths and challenges related to operational conditions, and the actions planned for their development.*

**ASPECTS:** Processes and good practices related to leadership and management

It is stated explicitly that each PI has full academic freedom to conduct a research program. This may seem an ideal situation but with the spectacular advances in basic sciences, the rising costs for research, and the complexity of the diseases/pathologies under study, a closed door ("silo") is not realistic for survival. Again it should be emphasized that translational research requires **both** excellence in basic science **and** excellence in the clinical characterization (diagnosis) and therapy selection. The goal of translational research is personalized medicine, and with such mission, the health care providers would resonance with approval.

Increasing clinical duties, administrative burden, and decreasing funds for research deserve special attention by HU.

Defined time should be set aside to discuss goals and means.

## 2.6 Leadership and management in the researcher community

- *Description of*
  - *the execution and processes of leadership in the RC*
  - *how the management-related responsibilities and roles are distributed in the RC*
  - *how the leadership- and management-related processes support*
    - *high quality research*
    - *collaboration between principal investigators and other researchers in the RC*
    - *the RC's research focus*
    - *strengthening of the RC's know-how*
- *Identification of the RC's strengths and challenges related to leadership and management, and the actions planned for developing the processes*

**ASPECTS:** Processes and good practices related to leadership and management

The leadership has successfully recruited talented young researchers and achieved a program structure with a broad and competent knowledge base. In the broad and varied field of research, it will be difficult to maintain excellence in all areas. We recommend a scientist in residence arrangement to allow visiting scientists spending a few weeks to a month lecturing and tutoring the junior staff and graduate students.

## 2.7 External competitive funding of the RC

- *The RCs were asked to provide information of such external competitive funding, where:*
  - *the funding decisions have been made during 1.1.2005–31.12.2010, and*
  - *the administrator of the funding is/has been the University of Helsinki*
- *On the e-form the RCs were asked to provide:*

- 1) *The relevant funding source(s) from a given list (Academy of Finland/Research Council, TEKES/The Finnish Funding Agency for Technology and Innovation, EU, ERC, foundations, other national funding organisations, other international funding organizations), and*
- 2) *The total sum of funding which the organisation in question had decided to allocate to the RCs members during 1.1.2005–31.12.2010.*

*Competitive funding reported in the text is also to be considered when evaluating this point.*

*ASPECTS: Scientific quality, scientific significance, societal impact, innovativeness and future significance*

Funding is reported to be very good according to national standards. The problem of recruiting excellent junior scientists without tenure-track options requires attention by HU.

## 2.8 The RC's strategic action plan for 2011–2013

- *RC's description of their future perspectives in relation to research and doctoral training.*

*ASPECTS: Scientific quality, scientific significance, societal impact, processes and good practices related to leadership and management, national and international collaboration, innovativeness, future significance*

The proposal for the next budget period is very superficial and cannot be evaluated – “driven by science questions”. Apparently, no new initiatives are planned or investments/new contacts.

The strong support for tenure-track positions for young investigators is commendable.

The requirement for MD-PIs in clinically oriented research seems a *conditio-sine-qua-non*. This point needs to be discussed in detail.

## 2.9 Evaluation of the category of the RC in the context of entity of the evaluation material (1-8)

*The RC's fitness to the chosen participation category.*

*Category 1. The research of the participating community represents the international cutting edge in its field.*

The MNRP strengths lie in a strategy to recruit state-of-the-art technologies in cell biology/biotechnology enabling identification of genetic and molecular bases of pathologies related to neurologic/psychiatric diseases. Consequences of this strategy are individual research groups of high quality with a wealth of international connections, and a potentially high societal impact of their research. The spectrum of scientific topics is rather broad, and the overall focus is on mechanistic rather than clinical levels of research. This marks a most promising basis for a convergent scientific strategy that will certainly move this RC towards one of highest international standing. For the time being, assignment of the RC to category 2 or 4 might have been a more adequate choice.

**Numeric evaluation: 4 (Excellent)**

## 2.10 Short description of how the RC members contributed the compilation of the stage 2 material

The processes employed were fair and appropriate. The reviewers have been impressed by the very clear distinctive description of strengths and challenges.

## **2.11 How the UH's focus areas are presented in the RC's research**

### *Focus area 6: Clinical research*

The RC is strongly devoted to basic research, with high translational potential. Bedside to bench is a clearly visible research direction of the RC, with efforts near exclusively on the bench level. Therefore the focus will fit well with “the basic structure of life”, and the link with “clinical science” seems one that can be developed.

## **2.12 RC-specific main recommendations**

The single most important recommendation is to develop a common theme and strategy for translational research.

## **2.13 RC-specific conclusions**

The strengths of this RC lie in a strategy to recruit state-of-the-art technologies in cell biology/biotechnology enabling identification of genetic and molecular bases of pathologies related to neurologic/psychiatric diseases. One consequence of this strategy are individual research groups of high quality with international connections, but a rather diverse spectrum of scientific topics, and a focus on the mechanistic rather than the clinical level of research. On the other hand this provides a most promising basis for development of this RC towards one of highest international standing.



# 3 Appendices

- A. Original evaluation material
  - a. Registration material – Stage 1
  - b. Answers to evaluation questions – Stage 2
  - c. List of publications
  - d. List of other scientific activities
- B. Bibliometric analyses
  - a. Analysis provided by CWTS/University of Leiden
  - b. Analysis provided by Helsinki University Library (66 RCs)



International evaluation of research and doctoral training  
at the University of Helsinki 2005-2010

RC-SPECIFIC MATERIAL FOR THE PEER REVIEW

NAME OF THE RESEARCHER COMMUNITY:

Research Program of Molecular Neurology (MNRP)

LEADER OF THE RESEARCHER COMMUNITY:

Professor Anu Wartiovaara, Molecular neurology research Program, Research Program Unit,  
Faculty of Medicine

RC-SPECIFIC MATERIAL FOR THE PEER REVIEW:

- Material submitted by the RC at stages 1 and 2 of the evaluation
  - STAGE 1 material: RC's registration form (incl. list of RC participants in an excel table)
  - STAGE 2 material: RC's answers to evaluation questions
- TUHAT compilations of the RC members' publications 1.1.2005-31.12.2010
- TUHAT compilations of the RC members' other scientific activities 1.1.2005-31.12.2010
- Web of Science(WoS)-based bibliometrics of the RC's publications data 1.1.2005-31.12.2010 (analysis carried out by CWTS, Leiden University)

*NB! Since Web of Science(WoS)-based bibliometrics does not provide representative results for most RCs representing humanities, social sciences and computer sciences, the publications of these RCs will be analyzed by the UH Library (results available by the end of June, 2011)*



INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE  
UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 1 MATERIAL (registration form)

1 RESPONSIBLE PERSON

Name: Wartiovaara, Anu

E-mail:

Phone: +358 9 4717 1965

Affiliation: Faculty of Medicine, Research Program Unit, Biomedicum-Helsinki

Street address: Haartmaninkatu 8

2 DESCRIPTION OF THE PARTICIPATING RESEARCHER COMMUNITY (RC)

Name of the participating RC (max. 30 characters): Research Program of Molecular Neurology

Acronym for the participating RC (max. 10 characters): MNRP

Description of the operational basis in 2005-2010 (eg. research collaboration, joint doctoral training activities) on which the RC was formed (MAX. 2200 characters with spaces): Molecular Neurology Research Program is a research unit of Faculty of Medicine, selected to be part of the research program unit in a competitive call for 2007-2012. MNRP consists of eight research groups, all interested in molecular basis of human diseases, with special emphasis on neurological disorders and energy metabolism. We form a unit with common research interest, shared unique materials, shared equipment, close collaboration, common seminar series and student training. Our synergy is based on complementing expertise, combining clinical experience to high quality molecular medicine and disease models. The aim of the unit is to exploit our scientific findings to benefit patient care, both diagnosis and treatment.

3 SCIENTIFIC FIELDS OF THE RC

Main scientific field of the RC's research: medicine, biomedicine and health sciences

RC's scientific subfield 1: Medicine, Research and Experimental

RC's scientific subfield 2: Clinical Neurology

RC's scientific subfield 3: Cell Biology

RC's scientific subfield 4: Neurosciences

Other, if not in the list: Mitochondrial medicine

Stem cell biology

4 RC'S PARTICIPATION CATEGORY

Participation category: 1. Research of the participating community represents the international cutting edge in its field

Justification for the selected participation category (MAX. 2200 characters with spaces): The research program unit of Molecular Neurology, consisting of eight group leaders, combines the expertise of clinical



## INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

### RC-SPECIFIC STAGE 1 MATERIAL (registration form)

and molecular medicine to basic biology. These group leaders are in different career stages, including internationally recognized senior PI's and group leaders of early-career-phase but excellent publication record. Two groups are part of Finnish Centre of Excellence for Mitochondrial Disease and Aging of the Academy of Finland. The common interest in molecular pathogenesis of neurological disease, with special emphasis on mitochondrial disorders, combined with excellent clinical materials, unique disease models, both clinical and molecular expertise, international collaboration networks, and excellent scientific publication and training record, justify the participation category 1.

#### 5 DESCRIPTION OF THE RC'S RESEARCH AND DOCTORAL TRAINING

Public description of the RC's research and doctoral training (MAX. 2200 characters with spaces): The Research Program of Molecular Neurology is one of the six Research Programs of the Faculty of Medicine, Helsinki University, for 2007 - 2012. Our program's ambitious mission is to clarify disease mechanisms underlying neurological and neuropsychiatric diseases. Our strong expertise in basic research enables us to search for disease and susceptibility genes, and to study the disease mechanisms in cultured cells, disease models and in patients and their tissues. By gaining knowledge on the molecular disease processes, we gain tools to search for drugs and chemical compounds that could slow down or affect these diseases. Further, this knowledge is utilized in patient counseling, for information on risk factors. The direct links of our program to child and adult neurology clinics enable effective translation of research knowledge to benefit the diagnosis and treatment of the patients. The program is closely connected to the graduate schools of the campus, and is active in doctoral training, with currently over 30 PhD projects undergoing. The program organizes common science days, lecture series and training courses on the topics of its interest.

Significance of the RC's research and doctoral training for the University of Helsinki (MAX. 2200 characters with spaces): The MNRP consists of one Centre of Excellence of the Academy of Finland (FinMIT) and the whole program was evaluated and selected based on its quality of science as a Research Program of Faculty of Medicine, 2007-2012. The groups produce tens of high profile scientific publications yearly, with important implications to medical care and biological knowledge. MNRP is closely connected to the graduate schools of the campus, and is active in doctoral training, with currently over 30 PhD projects undergoing. 10 completed PhD thesis works have been produced by the program during 2005-2010. The program organizes common science days, lecture series and training courses on the topics of its interest.

Keywords: Mitochondrial disease, mitochondrial function, neurodegeneration, stem cells, metabolic disease, stroke, inherited diseases, neuropsychiatry

#### 6 QUALITY OF RC'S RESEARCH AND DOCTORAL TRAINING

Justified estimate of the quality of the RC's research and doctoral training at national and international level during 2005-2010 (MAX. 2200 characters with spaces): MNRP consists of eight research groups, in different stages of career. Four group leaders are established, internationally recognized scientists, of which one belongs to FinMIT centre of excellence in science. Their publication record indicates excellence, and their success can also be seen in the amount of national and international competitive funding attracted (for 2010 over 3M €; including EU-FP7, new ERC. Four groups are in a more initial phase, and even their publication record has been excellent. The vision of the program is to foster young promising group leaders and support their independence within the strong program structure, research culture and





INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE  
UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 1 MATERIAL (registration form)

environment. MNRP groups together have supervised 10 completed PhD theses during 2005, with ~30 undergoing, being active in doctoral training. Four of the thesis works were approved with distinction (given to less than 10% of Faculty's theses) and attracted 5 thesis awards. We are convinced that the research done in our unit meets all international standards and we aim to highest quality pioneering-type of research in the field of molecular medicine.

Comments on how the RC's scientific productivity and doctoral training should be evaluated (MAX. 2200 characters with spaces): We suggest the Unit to be evaluated based on the quality of our publications, success in attracting external funding, clinical and biological relevance of our scientific results, translational value, i.e. bridging of basic science to clinical bed side and transfer of results to benefit clinical work, international and national networking, quality of doctoral thesis works. Our publishing strategy is active: we publish our original research findings in international scientific journals of high profile, and frequently also write reviews on topics of our area of expertise. Summaries of important findings, commentaries and reviews are also published as short informative summaries in national medical journals. Most PIs contribute to book chapters from their area of expertise. Publication policy is very active. Some of our PI's participate in editorial boards of international journals, indicating international recognition.

## LIST OF RC MEMBERS

NAME OF THE RESEARCHER COMMUNITY:			Molecular Neurology Research Program (MNRP), Faculty of Medicine, Biomedicum-Helsinki, University of Helsinki		
RC-LEADER			A. Wartiovaara		
CATEGORY			1		
	Last name	First name	PI-status (TUHAT, 29.11.2010)	Title of research and teaching personnel	Affiliation
1	Wartiovaara	Anu	x	Professor, principal investigator	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
2	Lindsberg	Perttu	x	Professor, principal investigator	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
3	Otonkoski	Timo	x	Professor, principal investigator	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
4	Battersby	Brendan	x	Senior researcher, principal investigator	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
5	Tienari	Pentti	x	Senior researcher, principal investigator	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
6	Hovatta	Iiris	x	Senior researcher, principal investigator	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
7	Eriksson	Ove	x	Senior researcher, principal investigator	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
8	Tyni	Tiina	x	Senior researcher, principal investigator	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
9	Miettinen	Paivi	x	senior researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
10	Tuuri	Timo		senior researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
11	Hyytiä	Petri		senior researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
12	Richter	Uwe		postdoctoral researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
13	Juhila	Juuso		postdoctoral researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
14	Hussein	Samer		postdoctoral researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
15	Lundin	Karolina		postdoctoral researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
16	Trokovic	Ras		postdoctoral researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
17	Nuotio	Krista		postdoctoral researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
18	Sairanen	Tiina		postdoctoral researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
19	Strbian	Daniel		postdoctoral researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
20	Eerola	Johanna		postdoctoral researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
21	Bonetti	Alessandro		postdoctoral researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
22	Carroll	Christopher		postdoctoral researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
23	Euro	Liliya		postdoctoral researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
24	Hakonen	Anna		postdoctoral researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
25	Hämäläinen	Riikka		postdoctoral researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
26	Isohanni	Pirjo		postdoctoral researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
27	Luoma	Petri		postdoctoral researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
28	Tynnismäa	Henna		postdoctoral researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
29	Yatsuga	Shuichi		postdoctoral researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
30	Marjavaara	Sanna		postdoctoral researcher	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
31	Ahlgqvist	Kati		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
32	Ahola-Erkkilä	Sofia		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
33	Buzkova	Jana		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
34	Götz	Alexandra		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
35	Nikkanen	Joni		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program

36	Ylikallio	Emil		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
37	Polinati	Padmini		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
38	Laaksovirta	Hannu		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
39	Peuralinna	Terhi		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
40	Isoviita	Veli-Matti		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
41	Mikkola	Milla		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
42	Hakonen	Elina		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
43	Toivonen	Sanna		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
44	Vuoristo	Sanna		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
45	Isoviita	Pia		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
46	Mattila	Olli		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
47	Saksi	Jani		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
48	Donner	Jonas		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
49	Kilpinen	Helena		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
50	Sipilä	Tessa		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
51	Polianskyte	Zydrune		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
52	Cascone	Sonia		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
53	Jokinen	Riikka		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program
54	Junnila	Heidi		Doctoral candidate	Faculty of Medicine, Research Program Unit, Molecular neurology research Program



INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE  
UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 2 MATERIAL

BACKGROUND INFORMATION

Name of the RC's responsible person: Wartiovaara, Anu

E-mail of the RC's responsible person:

Name and acronym of the participating RC: Molecular Neurology Research Program, MNRP

The RC's research represents the following key focus area of UH: 6. Kliininen tutkimus – Clinical research

Comments for selecting/not selecting the key focus area: The focus area of MNRP fits with both 'Clinical research' and with 'the basic structure of life'. However, one of our main strengths is the combination expertise of clinical medicine and basic science in our research projects, to elucidate mechanisms of neurological and metabolic disease and to develop diagnosis and therapy. Therefore, even with MNRP's strong basic science base, the primary focus area of ours is clinical science.

1 FOCUS AND QUALITY OF RC'S RESEARCH (MAX. 8800 CHARACTERS WITH SPACES)

- **Description of the RC's research focus, the quality of the RC's research (incl. key research questions and results) and the scientific significance of the RC's research for the research field(s).**

Research focus

The research focus of the Molecular Neurology Research Program (MNRP) is molecular mechanisms of neurological disorders, with a special emphasis on metabolism. Disorders of the nervous system are having an increasing impact in Western societies as the average lifespan is increasing, age being the biggest risk factor for neurodegeneration and stroke.

MNRP research topics can be divided into four partially overlapping categories: 1. Molecular genetics of neurological and neuropsychiatric disease 2. Mitochondrial dysfunction and physiological consequences in disease 3. Hypoxia and ischemia of the nervous system, and mechanisms of neuroprotection 4. Stem cell biology and metabolism; applications to disease modelling. MNRP combines the wide clinical and basic science expertise of our groups to enhance research excellence and translate findings to benefit patients.

MNRP has existed in the present group composition only from 2008. The groups of Wartiovaara, (AW), Tienari (PT) and Lindsberg (PL) formed the unit in 2005. In 2007, we were selected as a research program and able to recruit two excellent young group leaders: Iiris Hovatta (IH; Salk Institute, USA) and Brendan Battersby (BB; McGill University, Canada), who both had an excellent publication record (for example Hovatta et al. Nature 2005; Battersby et al. Nat Genet 2003 & 2007). At the same time, we strengthened the mitochondrial knowledge base by involving Tiina Tyni (TT), an expert of beta-oxidation, and Ove Eriksson (OE), a mitochondrial biochemist, to the unit. In 2008, the raising importance of stem cell biology, especially the development of induced pluripotent stem cell techniques, motivated us to combine forces with Timo Otonkoski (TO) and the Biomedicum Stem Cell Centre, to utilize our patient-derived cell culture materials in generating human disease models. The first iPS lines and differentiated cell lines (cardiomyocytes, neurons, hepatocytes) have been established from mitochondrial disease and amyotrophic lateral sclerosis patient samples.

The specific focus areas in 2005-2010 in individual research groups have been the following. Battersby: mechanisms of mitochondrial DNA segregation, mitochondrial biogenesis and dynamics. Eriksson: Mitochondrial proteases in cell death and their role in neuroprotection. Hovatta: Genetic regulation of normal and pathological anxiety and autism spectrum disorders. Lindsberg: The progression of acute



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ischemic neuronal injury, blood-brain-barrier damage and haemorrhage formation in the brain parenchyma and identification of novel targets for treatment of acute cerebrovascular disease. Otonkoski: Cell biology of human embryonic stem cells and human induced pluripotent stem cells (iPS), beta-cell biology and diabetes. Tienari: Genetics and epidemiology of neurodegeneration and demyelination. Tyni: The clinical features and pathogenetic mechanisms of mitochondrial fatty acid oxidation defects. Wartiovaara (Suomalainen in publications): Molecular basis of mitochondrial dysfunction in human disorders, development of diagnosis and therapy.

#### Quality of research

MNRP as a unit has published 183 original articles in international peer-reviewed journals during 2005-2010, of which 91 (50%) were published in journals with an impact factor over 5. Eleven articles (6%) were published in top journals (Nature Biotechnol, Nature Methods, Nature Genet, Science Transl Med, PNAS, PLoS Med, Lancet Neurol). These bibliometric features indicate excellent quality of research. The highlights of our research 2005-2010 are as follows:

- Development of mouse as an anxiety model (Hovatta et al. Nature 2005), and testing of those genetic variants in human populations (Donner et al Biol Psychiatry 2010)
- Identification of two mutations (in chromosomes 9p21 and 21q/SOD1) explaining more than 70% of Finnish familial ALS cases (Laaksovirta et al Lancet Neurol 2010).
- Cloning of a novel gene for progressive adult mitochondrial myopathy (Tynismaa et al Am J Hum Genet 2009)
- Identification of a novel form of pancreatic beta-cell dysregulation and characterization of its molecular basis (Otonkoski et al. Am J Hum Genet 2007).
- Development of induced pluripotent stem cell technology (Närva et al Nature Biotechnol 2010; International Stem Cell Initiative, Nature Biotechnol 2007).
- Identification of several genetic loci contributing to the risk of multiple sclerosis (e.g. Jakkula et al Am J Hum Genet 2010).
- Characterization of a universally conserved mitochondrial serine protease LACTB, as a potential polymerizing component of mitosome, a novel mitochondrial structure (Polianskyte et al PNAS 2009).
- Creation of the first animal model for late-onset mitochondrial dysfunction (Tynismaa et al. PNAS 2005), which was used for the first therapy trial for a true disease model (Ahola-Erkkilä et al. Hum Mol Genet 2010). These findings are being confirmed in humans, and the first therapy trial is initiated in patients.
- Characterization of a mechanism how mtDNA variants segregate in a tissue-specific manner: identification of Gimap3, an outer mitochondrial membrane GTPase, as a regulator of mtDNA segregation in leukocytes (Jokinen et al PLoS Genet 2010)
- Characterization of genetic basis of novel neurological disorders of childhood onset muscle dystrophy and progressive encephalopathy (Götz et al. Brain 2009; Hakonen et al. Brain 2008)
- Multiple clinical studies on stroke therapy and management (Perttu Lindsberg's publications, e.g. Mishra et al BMJ 2010).
- Demonstration of the role of perivascular mast cells in the acute reactive oedema during brain ischemia and its therapeutic implications (Strbian et al J Cereb Blood Flow Metab 2007 ; Strbian et al Circulation 2007)



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- Characterization of novel physiological consequences for mitochondrial DNA maintenance disorders, including a novel endocrine role for skeletal muscle (Ylikallio et al Hum Mol Genet 2010; Tynismaa et al Hum Mol Genet 2010).
- Characterisation of multiorgan dysfunction resulting from carnitine palmitoyltransferase deficiency (Roomets et al Neurology 2006).

#### Scientific significance

During 2005-2010 MNRP's research has: (1) identified new molecular genetic basis for several mitochondrial disorders, multiple sclerosis, parkinsonism and ALS; (2) developed novel therapeutic strategies for stroke and mitochondrial disorders; (3) discovered new molecular mechanisms in mitochondrial DNA maintenance, segregation and mitochondrial structure; (4) identified new clinical findings in neurological disorders; (5) developed novel animal models for anxiety and mitochondrial disorders; (6) established novel iPS cell culture models for research; (7) discovered novel physiological pathways in muscle degeneration and applied those findings as diagnostic tools to HUSlab, the major diagnostic laboratory of the Helsinki University Central Hospital. As a consequence of our work, hundreds of patients have achieved a specific DNA-level diagnosis and genetic counselling, and therapies are being developed for currently incurable disorders. Part of these achievements has been possible because of close collaborations within the RC, allowing sharing of valuable patient materials. These collaborations have resulted so far in 10 co-authored publications within the RC, the unit having existed only after 2007. However, grass-root level interaction, technology and knowledge sharing is active, which will lead to an increasing number of publications from joint MNRP projects.

#### • **Ways to strengthen the focus and improve the quality of the RC's research.**

Individual research projects evolve based on scientific question. We do not wish to restrict further MNRP focus, but aim to support infrastructure to foster excellence. The current intellectual environment at MNRP and Biomedicum-Helsinki is good. However, some structural aspects could improve quality:

- MNRP research is based solely on competitive grants, which typically are relatively small (<50,000 €/year). Some shuttling of HU basic funding to research, based on evaluated excellence (e.g. this evaluation), would enable undertaking of long term, innovative, risky projects. MNRP has been quite successful in attracting funding from Finland and EU, but has to compete separately for space, posts and resources, which takes time away from science.
- Currently, science is not attracting the best young people, because of lack of career paths. We welcome the new tenure-track system, but more such positions should be available. University positions for young PIs should be created (previous assistant professor), as many leave the country or academic science when relevant posts do not exist.

#### 2 PRACTISES AND QUALITY OF DOCTORAL TRAINING (MAX. 8800 CHARACTERS WITH SPACES)

- How is doctoral training organised in the RC? Description of the RC's principles for recruitment and selection of doctoral candidates, supervision of doctoral candidates, collaboration with faculties, departments/institutes, and potential graduate schools/doctoral programmes, good practises and quality assurance in doctoral training, and assuring good career perspectives for the doctoral candidates/fresh doctorates.

The principal goal of doctoral training within MNRP is to develop critical and analytical thinking skills of our students along with training in the latest scientific approaches in the field, which prepare them to solve complex scientific problems in biomedicine. Our students are recruited both domestically, from



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the University of Helsinki and other Finnish Universities, as well as internationally, particularly Europe. Recruitment can be unsolicited or solicited by notices distributed through such sites as FinBioNet (<http://www.biocenter.helsinki.fi/finbionet/>) and Nature, and selection is based on detailed interview and evaluation by individual group leaders and their group members. Some of our students conduct their MSc research within our unit and then progress into PhD studies. The quality of students attracted and admitted to the laboratories within our RC is very high. Most of our students succeeded in the competitive application rounds for local graduate schools at the University of Helsinki, i.e. Helsinki Biomedical Graduate School (HBGS) and Graduate School in Biotechnology and Molecular Biology (GSBM) – indeed, 15 out of 24 PhD students of our RC are enrolled in a graduate school.

Doctoral students are provided with intellectually challenging and ambitious research projects at the leading edge of our scientific disciplines. Supervision of the research project is overseen directly from the Principal Investigator and often, additional supervision is provided from a senior post-doctoral fellow within the laboratory. Our students have a follow-up or supervisory committee, which consists of two independent PIs that meet once a year to oversee the student's research progress. Students are expected to present their research at regular laboratory meetings, at an annual program retreat, network meetings and at leading scientific meetings. We have a bi-weekly journal club and monthly meeting within the RC for students to present scientific papers from the most outstanding journals, in addition to every group's own laboratory meetings. One of the PIs helps in the selection of scientific papers to encourage students to critically analyse the latest developments in biomedical research. These regular presentations ensure our students are effective communicators in science and English, which for most of the students is their second or third language. Most publications from the unit, including research project reports, MSc thesis or PhD thesis works, are written in English. Typically, the first draft of an article is written by the principal student. In order to defend the PhD thesis, students must follow the guidelines of the Faculty of Medicine, by publishing two to four first author papers, and one or two co-authored papers in high quality scientific journals. The supervisor and the follow-up/supervisory committee determine when the project is in mature state enough to write the thesis, and the final composition of the thesis is accepted by the Faculty. The PhD thesis standard in our unit is high – e.g. the best thesis of HBGS and the best thesis of the Faculty have been awarded in 2007 to our unit, as well as a special PhD award of Biomedicum-Helsinki Foundation in 2007.

Overall, doctoral training within the RC provides students with the ability to properly develop and master skills in critical and analytical thinking, oral and written communication, and excellent technical training in biomedical research. This training and the outstanding publications in leading scientific journals will prepare and assure our students of solid career perspectives in science. We encourage postdoctoral period in a foreign laboratory, and our students are well positioned to get independent funding for postdoc visit from Foundations. Because of published original research articles, required for Finnish thesis, typically students do not have difficulties in finding postdoctoral positions in major research centres. From 2005-2010, our former students have proceeded to postdocs e.g. in Yale University, University College London. Medical PhD students often proceed to clinical practice, but are supported in continuing in science as well. Many continue part-time research along with their clinical duties. Our first ex-students have returned from foreign postdoc positions to Finland, and are applying tenure-track positions as independent group leaders.

- RC's strengths and challenges related to the practises and quality of doctoral training, and the actions planned for their development.

#### Strengths:

- Multidisciplinary science base: our 24 PhD students come from medicine, genetics, biology, bioinformatics, biotechnology and biochemistry.



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- Versatile education: MNRP projects apply a wide variability of strategies and technologies, from leading-edge genomics to cell biology, animal models, behavioral testing, patient studies and protein biochemistry, offering opportunities to learn of various methods and skills.
- Opportunities to present and report science: science days and seminar series organized to promote discussion and to teach science communication.
- Active contribution in local graduate schools and their courses.
- Follow-up-groups for PhD students, to support project progression.
- Education on translation of science results to benefit patients.

#### Challenges:

- Recruitment of best students to research, due to lack of career options. MNRP strongly supports Faculty's attempts to create tenure-track positions.
- Administrative burden and labor-union involvement in PhD student career; the worker-attitude is not supportive for creative scientific research.

#### 3 SOCIETAL IMPACT OF RESEARCH AND DOCTORAL TRAINING (MAX. 4400 CHARACTERS WITH SPACES)

- Description of how the RC interacts with and contributes to the society (collaboration with public, private and/or 3rd sector).

MNRP is active in popularizing science. Our scientists, mostly the PIs, act as experts on the fields of neurodegeneration, stroke, mitochondrial disease, aging related degeneration, stem cell biology neuropsychiatry and genetics. Our several media appearances (TV, radio, magazines, newspapers) have been listed in the HU-TUHAT-database. We have successfully organized scientific symposia and utilized their speakers in public lectures, such as 'Sigrid Jusélius Public Lectures on aging and nervous system aging', with English-speaking leading experts on the topic, simultaneously translated in Finnish. These lectures attracted an actively discussing audience of over 500. Furthermore, we have contributed as speakers to Helsinki Science days (Tieteenpäivät), Brain awareness day, World Stroke day. Some of us are active writers: PT and PL report to Finnish physicians new developments in science in Duodecim-journal, and AW serves as a regular science columnist in Finnish Journal for Physicians (Suomen Lääkärilehti) and University Journal (Yliopistolehti). Contributions as Editorials and review articles have been written by many to Finnish medical journals and newspapers (AW, PT, PL, IH, TO). TT serves as the chair of Metabolic Club, aimed in delivering knowledge on metabolic disorders to scientists and physicians.

The physicians in our program work actively with patient organizations, to translate the new knowledge in the field to benefit the patients. For example, MS-union (PT), stroke-patient-union (PL), United Mitochondrial Disease Foundation (American patient organization; AW), Biking4energy (Dutch patient organization; AW) and Muscle disease union (AW). MNRP website has a patient-interface for mitochondrial disorder families and patients (<http://research.med.helsinki.fi/neuro/Wartiovaara/index.htm>), for frequently asked questions. PL has especially contributed to educate public of alarming initial stroke symptoms, and has been a driving force in affecting treatment strategies of stroke worldwide. For this contribution he was awarded the Scandinavian SalusAnsvar award in 2010.

MNRP has been a key actor (PT, AW, TO) in generating multidisciplinary collaboration between the technical university Aalto, for bio- and nanotechnology development. Both 'Neuro'-collaboration and 'Bionova' networks have been established, and collaboration towards applied sciences has been





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established. Our results, which have direct applications in medical use, are patented through Licentia-company, partially owned by HU. Patent applications involve diagnosis of Parkinson's disease and mitochondrial disease (AW, n=2), stroke treatment (PL, n=2).

- Ways to strengthen the societal impact of the RC's research and doctoral training.

We consider science popularization and expert role in the society as our important tasks. We make a significant contribution in this era, and common programs with high schools have been planned, to enhance interest in biomedical sciences. However, we make our greatest effort and have our focus in innovative scientific research. Our strong opinion is that innovations arise from non-restricted basic research – not necessarily from research that is now noted as translational - as unexpected finding may have the largest relevance for human well being and health. Therefore, we strongly support HU funding tools for basic sciences, to enhance long-term continuous efforts to tackle molecular basis of disease and normal cellular function.

#### 4 INTERNATIONAL AND NATIONAL (INCL. INTERSECTORAL) RESEARCH COLLABORATION AND RESEARCHER MOBILITY (MAX. 4400 CHARACTERS WITH SPACES)

- Description of the RC's research collaborations and joint doctoral training activities and how the RC has promoted researcher mobility.

The RC members participate actively in international and national collaborations and research networks. Collaboration within the RC is active and has so far resulted in 10 publications with authors from at least two research groups.

Regarding national networks, two PIs (Wartiovaara and Battersby) belong to the Academy of Finland funded FinMIT centre of excellence in science (<http://www.uta.fi/imt/finmit/>), the other groups including Howy Jacobs and Hans Spelbrink from the Institute of Medical Technology of Tampere University, as well as 'Academy Distinguished Prof' Laurie Kaguni (Michigan State University). Because of the disease-oriented focus of our research, collaboration with the Helsinki University Central Hospital is essential, and PIs have had collaboration, leading to co-authored publications, with at least 12 different clinics. Other national collaboration partners include research groups from University of Helsinki (Faculties of Medicine, Biological and Environmental Sciences, and Behavioral Sciences, Institutes of Biotechnology and Molecular Medicine), Universities of Oulu, Tampere, Eastern Finland and Turku, Seinäjoki and Joensuu Central Hospitals, the Finnish Red Cross, VTT, and THL.

We have participated in several EU networks, including SAVEBETA 2006-2009 (T. Otonkoski), ESTOOLS 2006-2010 (T. Otonkoski), LIV-ES 2008-2011 (T. Otonkoski), and SYSGENET COST 2010-2013 (I. Hovatta) networks. Other international joint research funding include Microsoft Research Foundation and American ALS Foundation funded project with NIH/ National Institute of Aging and University College London/ Institute of Neurology (P. Tienari) and The National MS Society of USA funded project with the Cambridge University and the International Multiple Sclerosis genetics consortium (P. Tienari), as well Finnish-Academy-funded research network between mitochondrial scientists in Japan and in Finland (FinMIT-Jmit), including yearly visits, conferences and collaboration. Altogether, the research program members had international collaboration, leading to co-authored publications, with more than 40 Universities or Research Institutes. Several research projects were carried out with collaborators from Columbia University (New York, USA), Karolinska Institute (Stockholm, Sweden), Bergen University (Norway), Michigan State University (East Lansing, USA), Sheffield University (UK), McGill University (Montreal, Canada), and Max Planck Institute on Aging (Cologne, Germany).

Research community's joint doctoral training activities have included both seminars and research meetings. "NeuroDays" is a two day scientific meeting organized by the Research Program of Molecular



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Neurology each year. In addition, we have organized "NeuroChat", a monthly research seminar with internal and invited external speakers (2005-2008) and a weekly journal club (2009-2010) in which students and postdocs have presented important research articles from the field.

Researcher mobility has been promoted by actively encouraging students to visit collaborating laboratories, to learn methodology and bring it to benefit the unit. These include e.g. visits to Karolinska Institute, University College London, NIH, Kyushu University (Japan) and Padova University (Italy).

- RC's strengths and challenges related to research collaboration and researcher mobility, and the actions planned for their development.

#### Strengths:

- RC is internationally and nationally highly networked, visualized by co-authored publications with over 40 different research institutes during 2005-2010.
- Fruitful collaboration with major national research centres and university hospitals.
- PIs are recognized partners of international collaboration networks and in jointly funded projects, especially in EU and US.
- Frequent researcher mobility as invited lectures and researcher exchange, for new methodology.
- Because of generated highly interactive collaboration links, we can obtain required knowledge and methodology for basically any kind of science needs.
- Collaborative links generated based on scientific questions, solidifying those links.

#### Challenges:

- no immediate challenges concerning research collaboration.

#### 5 OPERATIONAL CONDITIONS (MAX. 4400 CHARACTERS WITH SPACES)

- Description of the operational conditions in the RC's research environment (e.g. research infrastructure, balance between research and teaching duties).

Biomedicum Helsinki (BMH) research institute hosts about 200 principal investigators of the UH and Helsinki University Central Hospital, providing excellent possibilities for the interaction and collaboration between clinical and basic scientists. The RC operates in the 5th floor of the BMH, dedicated to the Research Programs of the Faculty of Medicine. This space is given for research programs for a fixed term (present term ad2012), as a result of their competitive evaluation. MNRP is an excellent example of this, since our PIs represent both basic and clinical research, and apply basic research approaches for translational research.

BMH provides an exceptionally good research infrastructure with a multitude of research services and core facilities. These allow scientists to get experienced guidance on a specific technology for a modest fee. Important facilities for MNRP are e.g. Biomedicum Imaging Unit with state-of-the-art confocal imaging on fixed and living cells and animals, transgenic animal unit, the Biomedicum Virus Core for retroviral and lentiviral work, Proteomics unit with state-of-the-art mass spectrometry facilities and expertise on protein purification and analysis, and deep sequencing methodology on site. For all core facilities, see [<http://www.biomedicum.fi/index.php?page=251&lang=2>]. MNRP has secretarial help, technical and IT-support and financial help from the RP-unit core services.

One of BMH core facilities, the Biomedicum Stem Cell Center (BSCC), is operated within MNRP, by the group of TO. It focuses on human pluripotent stem cells and is able to generate iPS cells from patients'



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skin cells. These stem cells can be differentiated into different cell types and used for studying disease mechanisms in relevant cells. The BSCC is part of Biocenter Finland-supported National Network since 2010, and is serving a growing number of investigators. Researchers at MNRP are actively developing methods for more efficient production of genetically intact patient-specific iPS. An important report of these activities has recently been published (Hussein et al. Nature, on-line publication 3.3.2011).

All PIs and senior investigators of the RC participate in the teaching of students, either undergraduate or graduate. PIs contribute to medical undergraduate student education on e.g. introductory courses and molecular biology (AW), Pediatrics and Endocrinology (TO), Neurology (PT and PL), biochemistry (OE), pediatric neurology (TT), and for biology students genetics (IH, AW, BB). TO is a member of the steering committee of the Translational Medicine Master's program with responsibility of the Regenerative Medicine courses, and BB runs the HBGS student weekly research seminars. PT is one of the teachers in the "meet the expert" sessions. PT has organized a 30h-annual lecture course entitled "Basic Mechanisms of Nervous System Disorders", which has been designed for the non-medical students of the University. In addition, all PIs serve as experts on their topic, giving tens of lectures every year for university hospitals, for other universities etc. The teaching load varies, but in general, all investigators in MNRP are able to keep their main emphasis in research.

- RC's strengths and challenges related to operational conditions, and the actions planned for their development.

#### Strengths:

- Access to state-of-the-art equipment and expertise in a wide selection of core facilities
- Excellent overall research infrastructure in research program unit and Biomedicum
- Own active contribution to research infrastructure: Stem Cell Center possesses unique know-how in an important new and rapidly developing area of biomedicine.
- Close contacts to clinics and patients

#### Challenges:

- The hospital district does not consider research as important as previously, and the clinician scientists are tightly bound to their clinical duties. Research funding of the hospital district (EVO-funds) is decreasing in the University hospitals, because more funds are directed into non-academic research and development. These aspects are limiting considerably the important contribution of clinicians to science.

### 6 LEADERSHIP AND MANAGEMENT IN THE RESEARCHER COMMUNITY (MAX. 4400 CHARACTERS WITH SPACES)

- Description of the execution and processes of leadership in the RC, how the management-related responsibilities and roles are distributed in the RC and how the leadership- and management-related processes support high quality research, collaboration between principal investigators and other researchers in the RC, the RC's research focus and strengthening of the RC's know-how.

MNRP is one of the six research programs (RP) at Faculty of Medicine, selected after a competitive international evaluation for the term 2007-2012. The whole RP-unit is led by Prof Olli Jänne, and representatives of all the RPs form the RP-unit board. This board decides of whole-unit strategies, and its representatives inform the individual RPs of the decisions.



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MNRP director is Anu Wartiovaara, who was nominated at the selection of our RP. The vice director is Pentti Tienari. The director is responsible for the overall management of the unit, including use of space and common budgetary funding (unit funds only available in 2010), reporting and RP-applications. All the eight PIs of MNRP are independent concerning their research questions and project funding. However, the PIs meet regularly, and decisions on general action plans, investments, leadership, student education, and science days are done typically by consensus. PIs participate in HU boards (e.g. Faculty Council, Board of Animal Centre, Biocentrum-Helsinki Board, PhD student board, graduate school boards, administrative HU boards). Information from these various instances is spread in PI-meetings.

The leadership- and management-related process supports high quality research by organizing research infrastructure to maximize exchange of information and scientist interaction. An important factor promoting exchange of information is our location in a common, continuous space. Offices and laboratory space, with their equipment are shared. MNRP has during 2005-10 organized different formats of weekly, bi-weekly or monthly research seminars. Currently we have a bi-weekly journal club of recent highest profile publications, and start now monthly 'hot topic' brain storms, organized by all 8 research groups on their turn. Furthermore, MNRP organizes yearly 'Neuro-days', an overnight science retreat, with presentations of MNRP postdocs and students and lively feedback discussions.

MNRP harbors valuable research materials, including hundreds of neurological patient cell lines, tissue collections and in-detail characterized autopsy materials from hundreds of subjects. These materials are shared between the MNRP groups, when needed, which forms a great resource for all. The newest development is utilization of the patient fibroblast and myoblast lines to generate induced pluripotent stem cells, and to differentiate them to disease-relevant cell types.

An MNRP group commits to active participation in program activities and contribution in developing the collaborative concept. However, research topics evolve based on results, and management aims only to foster excellent science, not to restrict individual research groups in their science questions. All our research funding is competitive and therefore every PI's success depends on competitive research questions.

RC's know-how is building up through international and national active science collaboration, active visits out and to the unit, as well as recruitment of high-quality scientists. The unit is well established and competitive in recruitment. Upon new PI recruitment, a proposal is made to the RP-board by the director, but otherwise the groups are independent on their recruitment of scientists.

- RC's strengths and challenges related to leadership and management, and the actions planned for developing the processes.

MNRP strengths:

- strong collaboration emphasis & networking
- interaction of researchers on daily basis
- support of exchange of information by common regular seminars and science days
- common research space and facilities, including shared equipment
- centrally applied licenses (radioactive work, virus-work)
- well-working consensus-based decision making
- active contribution of the unit to develop research environment in the RP-unit and at the university.



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A true challenge during 2009-10 is the exponentially increased administrative load. During 2009-2010, the central HU administration has applied several top-down administrative exercises, which use a lot of time of research staff. These include e.g. time-projecting to funding sources, in an hour-by-hour basis. As MNRP research is based on funding from tens of different sources, dividing working hours to single projects is irrelevant and uninformative. MNRP is acting through constructive feedback towards HU administration to develop bureaucracy to realistic direction and to make the administrative load bearable.

#### 7 EXTERNAL COMPETITIVE FUNDING OF THE RC

- Listing of the RCs external competitive funding, where:
  - the funding decisions have been made during 1.1.2005-31.12.2010, and
  - the administrator of the funding is/has been the University of Helsinki
- Academy of Finland (AF) - total amount of funding (in euros) AF has decided to allocate to the RC members during 1.1.2005-31.12.2010: 4385926
- Finnish Funding Agency for Technology and Innovation (TEKES) - total amount of funding (in euros) TEKES has decided to allocate to the RC members during 1.1.2005-31.12.2010: 115000
- European Union (EU) - total amount of funding (in euros) EU has decided to allocate to the RC members during 1.1.2005-31.12.2010: 873600
- European Research Council (ERC) - total amount of funding (in euros) ERC has decided to allocate to the RC members during 1.1.2005-31.12.2010:
- International and national foundations – names of international and national foundations which have decided to allocate funding to the RC members during 1.1.2005-31.12.2010, and the amount of their funding (in euros).
  - names of the foundations: Genetics Society of America
  - Sigrid Juselius Foundation
  - Yrjö Jahnsson Foundation
  - Jalmari and Rauha Ahokas Foundation
  - Nylands Nation
  - Research Foundation of Psychiatry (Finnish)
  - Foundation for alcohol research (Finnish)
  - Signe and Ane Gyllenbergs Foundation
  - Jane and Aatos Erkko foundation
  - CIMO
  - Juliana von Wendt Foundation
  - United Mitochondrial Disease Foundation
  - Juvenile Diabetes Research Foundation
  - European Foundation for the Study of Diabetes
  - Diabetes research foundation (Finnish)
  - total amount of funding (in euros) from the above-mentioned foundations: 5483200



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- Other international funding - names of other international funding organizations which have decided to allocate funding to the RC members during 1.1.2005-31.12.2010, and the amount of their funding (in euros).
  - names of the funding organizations:
  - total amount of funding (in euros) from the above-mentioned funding organizations:
- Other national funding (incl. EVO funding and Ministry of Education and Culture funded doctoral programme positions) - names of other national funding organizations which have decided to allocate funding to the RC members during 1.1.2005-31.12.2010, and the amount of their funding (in euros).
  - names of the funding organizations: Biocentrum Helsinki
  - Ministry of Education and Culture funded doctoral programme positions
  - University of Helsinki Funds
  - Institute of Molecular Medicine Finland
  - Oy H. Lundbeck Ab
  - Biocenter Finland
  - SPR
  - Orion
  - EVO funding
  - total amount of funding (in euros) from the above-mentioned funding organizations: 4843768

8 RC'S STRATEGIC ACTION PLAN FOR 2011–2013 (MAX. 4400 CHARACTERS WITH SPACES)

- Description of the RC's future perspectives in respect to research and doctoral training.

The current MNRP term as a research program ends in 2012, but an application for continuation for the years 2013-2016 will be submitted. We are well positioned in the application round, as research has been flourishing, and expect a continued status. At the application round, we will consider both recruitment and exit of groups based on optimal complementary research focus and skills, to compile a competitive unit. However, the core of the future unit is based on current structure, and focus is in neurological disease and metabolism.

The research focus of future MNRP will continue to be disease oriented and emphasize bridging of clinical and basic research. In practice this is realized by involving both practicing clinicians and basic scientists as group leaders. MD-PIs are needed to involve medical students in research, an increasing challenge because a science career is not viewed as secure or attractive to them anymore. Furthermore, the career development of PhD-group leaders in Faculty of Medicine requires attention, as several competitive young group leaders need new positions after their 5-year Academy of Finland scientist position expire, and retainment mechanisms or policy are still non-existent in our Faculty.

MNRP's research continues to be driven by questions arising from our research, and not directed by management or commercial interests. However, we do consider patenting, if results are directly applicable to diagnosis or treatment. As useful unique disease models in cultured cells and in mice have been created, and are being developed at MNRP, their utilization to therapy trials as well as understanding mechanisms and physiological consequences of disease is emphasized. Collection and analysis of clinical data of our patients, as well as human tissue and cell materials is continued, and allows analysis of relevance of in vitro and animal data in human patients. We are in the forefront to utilize state-of-the-art genomics for DNA-diagnosis, with our extensive well-characterized patient materials, in-house facilities of deep sequencing and exome-analysis and associated development of



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bioinformatic pipelines. We will utilize these whole-genome approaches, supported by dense SNP-maps, for neurological disease diagnosis. We expect to identify the molecular basis for several new disorders of Finnish disease heritage through individual genome analysis.

We will continue our active participation and student enrollment in local active graduate schools, and will participate in development of their competitive education curricula, for example by organizing courses involving our special expertise. We will support Faculty's new direction to establish tenure-track positions for excellent young group leaders, and support independence of our own senior postdocs in their attempts of founding their own research groups. We aim for students to complete their PhD thesis within an average of 4-5 years fulltime research, and MSc thesis within 6 months.

We continue our active collaborations, which are driven by science questions. Our wide networking ensures that required new expertise can be obtained from national or international visits.

We continue our active high-quality publication policy, and aim in publishing complete entities, instead of splitting data to minor reports. We support Faculty's new direction of considering the quality of publications and extent of PhD training instead of just counting the number of publications.

9 SHORT DESCRIPTION OF HOW THE RC MEMBERS HAVE CONTRIBUTED TO THE COMPILATION OF THE STAGE 2 MATERIALS (MAX. 1100 CHARACTERS WITH SPACES).

All eight research group leaders of MNRP have written and revised the submitted document, as representatives of their groups and group members, and the final format was done by the MNRP director Anu Wartiovaara. All the RC members have provided their publication and activity data to TUHAT database.



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## RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

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## 1 Analysis of publications

- Associated person is one of Anu Suomalainen Wartiovaara , Perttu Lindsberg , Timo Pyry Juhani Otonkoski ,  
Brendan Batterby , Pentti Tienari , Iris Hovatta , Ove  
Eriksson-Rosenberg , Tiina Tyni , Päivi Miettinen , , Timo Tuuri ,  
Petri Hyttiä , Uwe Richter , Juuso Johannes Juhila , Samer Hussein ,  
Karolina Lundin (Stenroos) , Ras Trokovic , Krista Nuotio ,  
Daniel Strbian , Johanna Eerola-Rautio , Alessandro Bonetti , Christopher John  
Carroll , Liliya Euro , Anna Henriikka Hakonen , Riikka Hämäläinen ,  
Pirjo Isohanni , Sanna Marjavaara , Petri Luoma , Henna Tyynismaa ,  
Shuichi Yatsuga , Jana Buzkova , Alexandra Götz , Kati Ahlqvist , Sofia Tuulikki Ahola-Erkkiä ,  
Emil Ylikallio , Padmini P Polinati , Hannu Laaksovirta , Terhi Peuralinna ,  
Sanna Charlotta Toivonen , Veli-Matti Isoviita , Milla Mikkola (Aho) , Elina Hakonen ,  
Jani Saksi , Sanna Maria Vuoristo , Pia Isoviita , Olli-Pekka Mattila ,  
Tessa Sipilä , Annunziata Sonia Cascone , Leena Helena Kilpinen ,  
Heidi Junnila , Riikka Jokinen ,

Publication type	Publication year						Total Count 2005 - 2010
	2005	2006	2007	2008	2009	2010	
A1 Refereed journal article	48	41	31	39	32	40	231
A2 Review in scientific journal				1	4	6	11
A3 Contribution to book/other compilations (refereed)	17	18	1	19	2		57
A4 Article in conference publication (refereed)	2	1	1	1	1	1	7
B1 Unrefereed journal article	8	2	7	10	3	2	32
B2 Contribution to book/other compilations (non-refereed)	3	2	1			1	7
B3 Unrefereed article in conference proceedings	1		1		1		3
C1 Published scientific monograph			1				1
D1 Article in professional journal						7	7
D2 Article in professional hand or guide book or in a professional data system, or text book material		1			2	1	4
E1 Popular article, newspaper article	3			3	3	1	10
H1 Patents					1		1





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## 2 Listing of publications

### A1 Refereed journal article

#### 2005

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- Otonkoski, T, Ustinov, J, Hakonen, E, Tammivuori, P, Gao, R, Palgi, J, Miettinen, PJ **2005**, *Downregulation of EGF receptor in the islets causes diabetes due to defects in beta-cell growth and function.*, Diabetes 54 American Diabetes Association.

#### **2006**

- Gao, R, Ustinov, J, Korsgren, O, Otonkoski, T **2006**, *Effects of immunosuppressive drugs on human islet neogenesis in vitro.*, Diabetologia 49 SPRINGER.

#### **2007**

- Leppäranta, M, Shirasawa, K, Uusikivi, J, Wang, K, Mattila, O, Kangas, A **2007**, 'Sea Ice Station Umeå, Winter 2005', in **Fifth workshop on Baltic sea ice climate**, pp. 29-36.

#### **2008**



## INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

### RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

#### MNRP/Wartiovaara

Inoue, T, Ide, T, Tynysmaa, H, Yoshida, M, Ando, M, Tanaka, A, Todaka, K, Kang, D, Suomalainen, A, Sunagawa, K **2008**, *Overexpression of Mitochondria DNA Helicase, Twinkle, Ameliorates Cardiac Remodeling and Failure in Mice*, Circulation Research 118 LIPPINCOTT WILLIAMS & WILKINS.

#### **2009**

Guse, K, Tynysmaa, H, Ahola-Erkilä, ST, Suomalainen, A, Pesonen, S, Cerullo, V, Hemminki, A **2009**, *Capsid Modified Adenoviruses Display Robust, Long Term Gene Expression in Adult Skeletal Muscle Tissue*, Molecular therapy 17 ACADEMIC PRESS..

#### **2010**

Mervaala, E, Biala, A, Merasto, S, Lempiäinen, J, Mattila, I, Martonen, EE, Eriksson, O, Louhelainen, M, Finckenberg, P, Kaheinen, P, Muller, DN, Luft, FC, Lapatto, R, Oresic, M **2010**, *Metabolomics in Angiotensin II-Induced Cardiac Hypertrophy*, Paper presented at 63rd Annual Fall Conference and Scientific Sessions of the American-Heart-Association-Council-for-High-Blood-Pressure-Research, Chicago, IL, SEP 23-26, 2009. Hypertension 55 2 LIPPINCOTT WILLIAMS & WILKINS.

#### **B1 Unrefereed journal article**

#### **2005**

Hennah, W, Tuulio-Henriksson, A, Paunio, T, Ekelund, J, Kilpinen, H, Palo, OM, Silander, K, Partonen, T, Lönnqvist, J, Peltonen, L **2005**, 'Two biologically interacting genes, DISC1 and NDE1, associate with schizophrenia and visual working memory functions: [Abstract, XIII World Congress on Psychiatric Genetics 2005]', **American journal of medical genetics. Part B, Neuropsychiatric genetics**, vol 138B, no. 1, pp. 123-123.

Huopio, H, Laakso, M, Otonkoski, T **2005**, 'Synnynnäinen hyperinsulinismi: [katsaus]', **Duodecim**, vol 121, pp. 1166-1175.

Lindsberg, PJ **2005**, 'High blood pressure after acute cerebrovascular occlusion: risk or risk marker? : [editorial comment]', **Stroke**, vol 36, no. 2, pp. 268-269.

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Wartiovaara, A **2005**, 'Vastine edelliseen: [kirjeitä ja mielipiteitä]', **Duodecim**, vol 121, pp. 2008-2009.

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#### **2006**

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#### **2007**

Hovatta, I **2007**, 'Ahdistuneisuuden genetiikka: spesifisten geenien tunnistus on alkanut : [pääkirjoitus]', **Duodecim**, vol 123, no. 14, pp. 1665-1666.

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Laaksovirta, H **2007**, 'Perheittäin esiintyvä ja periytyvä amyotrofinen lateraaliskleroosi (FALS ja SOD1-ALS): [katsausartikkeli]', **Duodecim**, vol 123, no. 26, pp. 2555-2558.

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#### **2008**

Billestrup, N, Otonkoski, T **2008**, 'Dedifferentiation for replication of human beta-cells: a division between mice and men?', **Diabetes**, vol 57, pp. 1575-1583.

Bogolovsky, T, Häppölä, O, Tatlisumak, T, Kaste, M, Lappalainen, K, Paananen, T, Lindsberg, PJ **2008**, 'Edellisen johdosta: letter', **Duodecim**, vol 124, pp. 1137-1138.





## INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

### RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

#### MNRP/Wartiovaara

Hanley, N, Hanley, K, Miettinen, P, Otonkoski, T **2008**, 'Weighing up beta-cell mass in mice and humans: Self-renewal, progenitors or stem cells?', **Molecular and Cellular Endocrinology**, vol 288, pp. 79-85.

Hovatta, I, Paunio, T **2008**, 'Mieli, keho ja geenit', **Duodecim**, vol 124, no. 6, pp. 675-677.

Lindsberg, PJ **2008**, 'Kun muistijälki ei tartu: Tilapäisen täydellisen muistinmenetyksen taustat : katsaus', **Duodecim**, vol 124, pp. 781-788.

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Silvennoinen, H, Hamberg, L, Lindsberg, PJ, Valanne, L, Hunter, GJ **2008**, 'TT-perfuusiokuvaus osoitti liuotushoidon suurentavan infarktilta säästynyttä aivokudosaluetta: [ in press AJNR Am J Neuroradiol ]', **Duodecim**, vol 124, pp. 1203-1204.

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#### **2009**

Lindsberg, PJ, Koistinaho, J, Tienari, PJ **2009**, 'Minosykliini - harvinaisen "laajakirjainen" antibiootti: [pääkirjoitus]', **Duodecim**, vol 125, pp. 123-125.

Lindsberg, PJ **2009**, 'Kädellisten ryhmäkanne Bill Gatesia vastaan: [kolumni]', **Duodecim**, vol 125, pp. 1306-1307.

Trkovic, R, Lindholm, DB **2009**, 'Inducerade pluripotenta stamceller – nya löften och möjligheter för forskning och terapi', **Finska Läkaresällskapets Handlingar**.

#### **2010**

Laurent, LC, Nievergelt, CM, Lynch, C, Fakunle, E, Harness, JV, Schmidt, U, Galat, V, Laslett, AL, Otonkoski, T, Keirstead, HS, Schork, A, Park, H, Loring, JF **2010**, 'Restricted ethnic diversity in human embryonic stem cell lines', **Nature methods**, vol 7, no. 1, pp. 6-7.

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### **B2 Contribution to book/other compilations (non-refereed)**

#### **2005**

Hovatta, I, Saarela, J **2005**, 'Affymetrix GeneChip system', in J Tuimala, M Laine (eds), **DNA Microarray Data Analysis**, CSC - Scientific Computing Ltd., pp. 25-31.

Hovatta, I, Barlow, C **2005**, 'Genome to Disease', in S Koslow, S Subramaniam (eds), **Databasing the Brain. Data to Knowledge**, John Wiley and Sons, Inc, pp. 169-190.

Suomalainen Wartiovaara, A, Syvänen, A **2005**, 'Affinity-capture and solid-phase sequencing of biotinylated PCR products', in J Morgan (ed.), **Nucleic acids protocols handbook**, Humana Press.

#### **2006**

Suomalainen Wartiovaara, A, Syvänen, A **2006**, 'Analysis of Nucleotide sequence variations by solid-phase minisequencing', in J Morgan (ed.), **Nucleic acids protocols handbook**, Humana Press.

Suomalainen Wartiovaara, A, Peltola, KE, Paetau, A, Wallgren-Pettersson, C **2006**, 'Experimental models of muscle disease', in T Tatlisumak, M Fischer (eds), **Methods and Techniques in Animal Research. Handbook of experimental neurology**, Cambridge University Press.

#### **2007**

Suomalainen Wartiovaara, A, Syvänen, A **2007**, 'Quantitative analysis of DNA sequences by PCR and solid-phase minisequencing', in JM Walker, R Rapley (eds), **Medical Biomethods Handbook**, Humana Press.

#### **2010**

Hovatta, I, Sipilä, TLM **2010**, 'Molecular genetics of anxiety', **Encyclopedia of Life Sciences**, John Wiley & Sons, Chichester.

### **B3 Unrefereed article in conference proceedings**





## INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

### RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

#### MNRP/Wartiovaara

##### **2005**

Leppäranta, M, Mattila, O **2005**, 'Supraglacial Suvivesi-järven elinkaari Antarktikassa', in **Geofysiikan päivät XXII**.

##### **2007**

Mattila, O, Leppäranta, M **2007**, 'Lumen ilmastollisen herkkyyden tarkastelu arktisella jäätiköllä Koillismaalla, Huippuvuorilla', in **XXIII GEOFYSIIKAN PÄIVÄT**, pp. 101-106 **Geofysiikan päivät**.

##### **2009**

Isollahni, P, Loennqvist, T, Linnankivi, T, Uusimaa, J, Harju, A, Paetau, A, Kalimo, H, Valanne, L, Suomalainen, A, Pihko, H **2009**, 'POLG MUTATIONS CAUSE SEVERE EARLY ONSET EPILEPSY WITH LIVER FAILURE', in **8th European Congress on Epileptology**, pp. 117-117.

#### C1 Published scientific monograph

##### **2007**

Kanto, E, Leppäranta, M, Mattila, O **2007**, *Seasonal snow in Antarctica: data report II*, **Report series in geophysics / University of Helsinki**, no. 55, **University of Helsinki, Division of Geophysics, Helsinki**.

#### D1 Article in professional journal

##### **2010**

Hakonen, AH, Isollahni, P, Rantamäki, M, Kälviäinen, R, Nordin, A, Uusimaa, J, Paetau, A, Udd, B, Pihko, H, Wartiovaara, A **2010**, 'Mitokondriaalinen resessiivinen ataksia-syndrooma ja valproaattihoidon toksisuus', **Duodecim**, vol 126, no. 13, pp. 1552-1559.

Hovatta, I, Tienari, P, Sajantila, A, Wartiovaara, A **2010**, 'Tutkijoiden kouluttajien haasteet', **Duodecim**, vol 126, no. 19, pp. 2301-2303.

Kere, J, Meri, S, Suomalainen Wartiovaara, A **2010**, 'Molekyyli-genetiikan huima neljännesvuosisata (Two decades of molecular genetics)', **Duodecim**, vol 126, no. 19, pp. 2297-2299.

Sairanen, T, Rantanen, K, Lindsberg, P **2010**, 'TIA:n diagnostiikka ja nykyhoito', **Duodecim**, vol 126, no. 12, pp. 1401-10.

Silvennoinen, H, Lindsberg, P, Valanne, L **2010**, 'Perfuusiokuvaus aivoiskemian diagnostiikassa', **Duodecim**, vol 126, no. 1, pp. 33-39.

Tienari, P **2010**, 'Multipeliskleroosi (MS-tauti)', **Duodecim**, vol 126, no. 21, pp. 2525-7.

Tienari, P **2010**, 'Internetissä kiehuvu - tutkijat suosittelivat jäitä hattuun', **Avain : neurologinen aikakauslehti**, vol 2010, no. 3, pp. 5.

#### D2 Article in professional hand or guide book or in a professional data system, or text book material

##### **2006**

Kaste, M, Sairanen, T, Häppölä, O, Lassila, R, Lepäntalo, M, Lindsberg, PJ, Lohi, J, Pesonen, H, Pohjasvaara, T, Poutiainen, E, Rissanen, A, Roine, RO, Sivenius, J, Strandberg, T, Syväne, M, Turka, J, Suomalaisen Lääkäriseuran Duodecimin ja Suomen Neurologinen Yhdistys ry:n asettama työryhmä **2006**, 'Aivoinfarkti: Käypä hoito -suositus', **Aivoinfarkti. Käypä hoito -suositus..**

##### **2009**

Lindsberg, P, Kallela, KMJ **2009**, 'Tajuton potilas: Comatose patient', in I Kunnamo (ed.), **Lääkärin käsikirja. Physician's Desk Reference Book., Duodecim**.

Lindsberg, P, Kaakkola, S **2009**, 'Neurologia', in V Pettilä, M Renko, P Kurtti (eds), **Terapia-muistio, Orion, Espoo**.

##### **2010**

Tienari, P, Polvikoski, TM, Tanila, H **2010**, 'Alzheimerin taudin patogeneesi', in T Erkinjuntti, J Rinne, H Soininen (eds), **Muistisairaudet, Duodecim, Porvoo**.

#### E1 Popular article, newspaper article

##### **2005**

Mattila, O **2005**, 'FINNARP 2004 - kum kotimaan lumi ja jää eivät riitä', **Geologi**, vol 57, pp. 66-68.

Otonkoski, TPJ **2005**, 'Kantasoluhoidoissa toiveet eivät aina vastaa todellisuutta', **Helsingin Sanomat**.

Tienari, P **2005**, 'Suuria lupauksia, suuria haasteita: MS ja ihmisperimä', **Avain : neurologinen aikakauslehti**, vol 2005, no. 3, pp. 6-8.



INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE  
UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

MNRP/Wartiovaara

**2008**

Alitalo, K, Otonkoski, TPJ **2008**, 'Vieraskynä/Pääkirjoitus: Kantasolukeksintö mahdollistaa henkilökohtaiset soluvärosat', **Helsingin Sanomat**.

Otonkoski, TPJ **2008**, 'Kantasoluhoidossa toiveet eivät aina vastaa todellisuutta', **Helsingin Sanomat**.

Peuralinna T, Oinas M, Polvikoski T, Paetau A, Sulkava R, Niinistö L, Kalimo H, Hernandez D, Hardy J, Singleton A, Tienari PJ, Myllykangas L **2008**, 'Geeivariantti suojaava vanhuusiän rappeumamuutoksilta', **Duodecim**, vol 124, no. 16, pp. 1855.

**2009**

Lindsberg, PJ **2009**, 'Tahtomattaan facebookissa: Kuka hyötyy nenänsä pistämisestä nettiin?', **Duodecim**, vol 2009, 1 s.

Lindsberg, PJ **2009**, 'Terveysvaikutteinen media-ilta', **Duodecim**, vol 2009, 2s.

Tienari, PJ **2009**, 'Perimä ja MS', **Avain : neurologinen aikakauslehti**, vol 40, no. 3, pp. 26-30.

**2010**

Laaksovirta, H **2010**, 'Kansainvälinen tutkimus toi lisätietoa ALS:in syntymekanismeista', **Porras**, no. 5.

**H1 Patents**

**2009**

Suomalainen Wartiovaara, A, Tyynismaa, H, Raimundo, N **2009**, *Serum diagnostics for mitochondrial disease*, PCT/FI2010/050223.



# INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

## RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

### MNRP/Wartiovaara

## 1 Analysis of activities 2005-2010

- Associated person is one of Anu Suomalainen Wartiovaara , Perttu Lindsberg , Timo Pyry Juhani Otonkoski ,  
Brendan Battersby , Pentti Tienari , Iiris Hovatta , Ove  
Eriksson-Rosenberg , Tiina Tyni , Päivi Miettinen , Timo Tuuri ,  
Petri Hyytiä , Uwe Richter , Juuso Johannes Juhila , Samer Hussein,  
Karolina Lundin (Stenroos) , Ras Trokovic , Krista Nuotio ,  
Daniel Strbian , Johanna Eerola-Rautio , Alessandro Bonetti , Christopher John  
Carroll , Lilya Euro , Anna Henriikka Hakonen , Riikka Hämäläinen ,  
Shuichi Yatsuga , Pirjo Isohanni , Petri Luoma , Henna Tyynismaa , Sofia Tuulikki Ahola-Erkkiä ,  
Jana Buzkova , Sanna Marjavaara , Alexandra Götz , Kati Ahlqvist ,  
Emil Ylikallio , Padmini P Polinati , Hannu Laaksovirta , Terhi Peuralinna ,  
Veli-Matti Isoviita , Milla Mikkola (Aho) , Elina Hakonen ,  
Sanna Charlotta Toivonen , Sanna Maria Vuoristo , Pia Isoviita , Olli-Pekka Mattila ,  
Jani Saksi , Jonas Donner , Leena Helena Kilpinen ,  
Tessa Sipilä , Annunziata Sonia Cascone , Riikka Jokinen ,  
Heidi Junnila ,

Activity type	Count
Supervisor or co-supervisor of doctoral thesis	33
Prizes and awards	23
Editor of research journal	8
Peer review of manuscripts	35
Editor of communication journal	1
Assessment of candidates for academic posts	2
Membership or other role in review committee	2
Membership or other role in research network	4
Membership or other role in national/international committee, council, board	45
Membership or other role in public Finnish or international organization	2
Participation in interview for written media	14
Participation in radio programme	10
Participation in TV programme	5
Participation in interview for web based media	1



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RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

MNRP/Wartiovaara

## 2 Listing of activities 2005-2010

### Supervisor or co-supervisor of doctoral thesis

#### **Anu Suomalainen Wartiovaara ,**

Supervisor of Anna Hakonen's PhD thesis, Anu Suomalainen Wartiovaara, 2002 → 2009  
Supervisor of Petri Luoma's PhD thesis, Anu Suomalainen Wartiovaara, 2002 → 2007  
Supervisor of Eino Palin's PhD thesis, Anu Suomalainen Wartiovaara, 2003 → ..., Finland  
Supervisor of Henna Tynni's PhD thesis, Anu Suomalainen Wartiovaara, 2003 → 2007  
Supervisor of Nuno Raimundo's PhD thesis, Anu Suomalainen Wartiovaara, 2004 → 2009  
Supervisor of Emil Ylikallio's PhD thesis, Anu Suomalainen Wartiovaara, 2005 → 2010, Finland  
Supervisor of Pirjo Isohanni's PhD thesis, Anu Suomalainen Wartiovaara, 2005 → 2010, Finland  
Supervisor of Alexandra Götz's PhD thesis, Anu Suomalainen Wartiovaara, 2006 → ..., Finland  
Supervisor of Kati Ahlqvist's PhD, Anu Suomalainen Wartiovaara, 2008 → ..., Finland  
Supervisor of Jana Buzkova's PhD thesis, Anu Suomalainen Wartiovaara, 2009 → ..., Finland  
Supervisor of Sofia Ahola-Erkkilä's PhD thesis, Anu Suomalainen Wartiovaara, 2009 → ..., Finland  
Supervisor of Ilse Paetau's PhD thesis, Anu Suomalainen Wartiovaara, 2010 → ..., Finland  
Supervisor of Jenni Elo's PhD thesis, Anu Suomalainen Wartiovaara, 2010 → ..., Finland  
Supervisor of Joni Nikkanen's PhD thesis, Anu Suomalainen Wartiovaara, 2010 → ..., Finland

#### **Perttu Lindsberg ,**

Supervision of Krista Nuotio's PhD thesis, Perttu Lindsberg, 2007, Finland  
Supervision of Daniel Strbian's PhD thesis, Perttu Lindsberg, 2008, Finland

#### **Timo Pyry Juhani Otonkoski ,**

Supervisor of Gao Ru's PhD thesis, Timo Pyry Juhani Otonkoski, 2002 → 2007, Finland  
Supervisor of HBGS Ph.D student, Timo Pyry Juhani Otonkoski, 2006 → 2010, Finland  
Supervisor of HBGS Ph.D. student, Timo Pyry Juhani Otonkoski, 2008 → ..., Finland  
Supervisor of HBGS Ph.D. student, Timo Pyry Juhani Otonkoski, 2010 → ..., Finland

#### **Brendan Battersby ,**

Supervisor of Miia Taipale's PhD thesis, Brendan Battersby, 2008 → 2009  
Supervisor of Heidi Junnila's PhD thesis, Brendan Battersby, 2009 → ..., Finland  
Supervisor of Riikka Jokinen's PhD thesis, Brendan Battersby, 2009 → ..., Finland

#### **Pentti Tienari ,**

Supervisor of Johanna Eerola-Rautio's PhD thesis, Pentti Tienari, 2005 → 2008, Finland  
Supervisor of Alessandro Bonetti's PhD thesis, Pentti Tienari, 2007 → 2009, Finland

#### **Iiris Hovatta ,**

Supervisor of Jonas Donner's PhD thesis, Iiris Hovatta, 2007 → ..., Finland  
Supervisor of Helena Kilpinen's PhD thesis, Iiris Hovatta, 2008 → 15.12.2010, Finland  
Supervisor of Tessa Sipilä's PhD thesis, Iiris Hovatta, 2008 → ..., Finland  
Supervisor of Mari Rossi's PhD thesis, Iiris Hovatta, 2010 → ..., Finland

#### **Ove Eriksson-Rosenberg ,**

Supervisor of Zdrune Polianskyte's PhD thesis, Ove Eriksson-Rosenberg, 12.12.2009, Finland



## INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

### RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

#### MNRP/Wartiovaara

##### **Daniel Strbian ,**

Thesis Supervision, Daniel Strbian, 2008 → ..., Finland

Thesis Supervision, Daniel Strbian, 2009 → ...

##### **Christopher John Carroll ,**

Thesis co-supervision of Jana Buzkova, Christopher John Carroll, 2009 → ...

#### **Prizes and awards**

##### **Anu Suomalainen Wartiovaara ,**

Centre of Excellence in Science of the Academy of Finland, Anu Suomalainen Wartiovaara, 2002 → 2007, Finland

EMBO Young Investigator, Anu Suomalainen Wartiovaara, 2002 → 2005

Sigrid Jusélius Foundation major research grant, Anu Suomalainen Wartiovaara, 2005 → 2010, Finland

Membership in Finnish Academy of Science and Letters, Anu Suomalainen Wartiovaara, 2007, Finland

Sigrid Jusélius Professor of clinical molecular medicine, Anu Suomalainen Wartiovaara, 2007 → 2011, Finland

Centre of Excellence in Science of the Academy of Finland, Anu Suomalainen Wartiovaara, 2008 → 2013, Finland

Jane and Aatos Erkko Foundation, major grant, Anu Suomalainen Wartiovaara, 2008 → 2012, Finland

##### **Perttu Lindsberg ,**

SalusAnsvar Prize in Medicine 2010, Perttu Lindsberg, 2010

SalusAnsvar Prize for Medicine 2010, Perttu Lindsberg, 03.12.2010, Sweden

##### **Timo Pyry Juhani Otonkoski ,**

Ray and Robert L. Kroc Lecture Award, Timo Pyry Juhani Otonkoski, 11.06.2009, Sweden

##### **Iiris Hovatta ,**

Suomen L'Oreal-UNESCO Women in Science palkinto, Iiris Hovatta, 2006

Suomen lääketieteellisen genetiikan yhdistyksen genetiikan palkinto, Iiris Hovatta, 2006, Finland

Toinen palkinto Human genome meeting posterikilpailussa, Iiris Hovatta, 2006

Duodecimin kirjoituspalkinto, Iiris Hovatta, 2007, Finland

Pro gradu -tutkielman hyvä ohjaaja -palkinto, Iiris Hovatta, 2007, Finland

Posteripalkinto ESF:n Functional Genomics and Disease -kokouksessa, Iiris Hovatta, 2008

Rosalind Franklin Young Investigator Award, Iiris Hovatta, 2010

##### **Ove Eriksson-Rosenberg ,**

Oskar Öflunds Stiftelses Stora Pris, Ove Eriksson-Rosenberg, 19.05.2009

##### **Daniel Strbian ,**

Young Scientist Prize 2006, Daniel Strbian, 2006

Best thesis of the year 2008, Daniel Strbian, 2009

##### **Henna Tyynismaa ,**

Best PhD thesis, Faculty of Medicine, University of Helsinki, 2007, Henna Tyynismaa, 2007

The University of Helsinki Biomedical Thesis Award, Licentia, 2007, Henna Tyynismaa, 2007

##### **Riikka Jokinen ,**

Best Abstract Award (third prize), Riikka Jokinen, 18.06.2010

#### **Editor of research journal**

##### **Perttu Lindsberg ,**

Assistant editor of Stroke, Perttu Lindsberg, 2000 → 2005, United States



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MNRP/Wartiovaara

**Timo Pyry Juhani Otonkoski ,**

Diabetologia, Associate Editor, Timo Pyry Juhani Otonkoski, 2008 → 2010, Germany

**Pentti Tienari ,**

Annals of Neurology, Pentti Tienari, 01.01.2005 → 31.12.2005, United States

BRAIN, Pentti Tienari, 01.01.2005 → 31.12.2005, United Kingdom

European Journal of Human Genetics, Pentti Tienari, 01.01.2005 → 31.12.2005, Netherlands

Member of editorial board of Journal of Medical Genetics, Pentti Tienari, 01.01.2005 → 31.12.2005, United States

STROKE, Pentti Tienari, 01.01.2005 → 31.12.2005, United States

**Daniel Strbian ,**

Current Vascular Pharmacology, Daniel Strbian, 2010 → ...

**Peer review of manuscripts**

**Anu Suomalainen Wartiovaara ,**

Reviewer of articles for international journals, Anu Suomalainen Wartiovaara, 01.01.2002 → 2011

**Timo Pyry Juhani Otonkoski ,**

DIABETES AND METABOLISM REVIEWS, Timo Pyry Juhani Otonkoski, 01.01.1999 → ..., United States

DUODECIM, Timo Pyry Juhani Otonkoski, 01.01.1999 → ..., Finland

Diabetes, Timo Pyry Juhani Otonkoski, 01.01.1999 → ..., United States

MOLECULAR AND CELLULAR ENDOCRINOLOGY, Timo Pyry Juhani Otonkoski, 01.01.1999 → ...

Diabetologia, Timo Pyry Juhani Otonkoski, 01.01.2000 → ..., Germany

Endocrinology, Timo Pyry Juhani Otonkoski, 20.01.2001 → ..., United States

FEBS Letters, Timo Pyry Juhani Otonkoski, 01.01.2002 → ..., Germany

Molecular and Cellular Endocrinology, Timo Pyry Juhani Otonkoski, 01.01.2002 → ..., Finland

Journal of Clinical Endocrinology and Metabolism, Timo Pyry Juhani Otonkoski, 01.01.2004 → ..., United States

European Journal of Endocrinology, Timo Pyry Juhani Otonkoski, 23.03.2006 → ..., Germany

Hormone Research, Timo Pyry Juhani Otonkoski, 23.03.2006 → 31.12.2011, Germany

Nature Clinical Practice, Timo Pyry Juhani Otonkoski, 23.03.2006 → 31.12.2011, United States

The Lancet, Timo Pyry Juhani Otonkoski, 23.03.2006 → 31.12.2011, United Kingdom

**Iiris Hovatta ,**

Peer reviewer of 23 scientific journals, Iiris Hovatta, 2004 → ...

**Karolina Lundin (Stenroos) ,**

Peer review of manuscripts, Karolina Lundin (Stenroos), 22.05.2009 → 18.06.2009

**Krista Nuotio ,**

Stroke Reviewer, Krista Nuotio, 2003 → ...

**Daniel Strbian ,**

Brain Research, Daniel Strbian, 2007 → ...

European Journal of Neurology, Daniel Strbian, 2007 → ...

Neuroscience Letters, Daniel Strbian, 2007 → ...

Pharmacology, Biochemistry and Behavior, Daniel Strbian, 2007 → ...

Journal of Neuroscience Methods, Daniel Strbian, 2008 → ...

Journal of Cerebral Blood Flow and Metabolism, Daniel Strbian, 2008 → ...

Neuroscience, Daniel Strbian, 2008 → ...



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Computerized Medical Imaging and Graphics, Daniel Strbian, 2009 → ...

Stroke, Daniel Strbian, 2009 → ...

Case Reports in Neurology, Daniel Strbian, 2010 → ...

Experimental & Translational Stroke Medicine, Daniel Strbian, 2010 → ...

#### **Henna Tyynismaa ,**

BBA-Molecular Basis of Disease, Henna Tyynismaa, 2009

Transgenic Research, Henna Tyynismaa, 2009

American Journal of Human Genetics, Henna Tyynismaa, 2010

Gene, Henna Tyynismaa, 2010

Journal of Aging Research, Henna Tyynismaa, 2010

Journal of Neurology, Henna Tyynismaa, 2010

#### **Jani Saksi ,**

Stroke, Jani Saksi, 2005 → ...

#### **Editor of communication journal**

##### **Timo Pyry Juhani Otonkoski ,**

Member of editorial board of Hyvä Terveys, Timo Pyry Juhani Otonkoski, 2008 → 2010, Finland

#### **Assessment of candidates for academic posts**

##### **Anu Suomalainen Wartiovaara ,**

Reviewer of applications for tenure professorship, Anu Suomalainen Wartiovaara, 2005, United States

Reviewer of applications for tenure professorship, Anu Suomalainen Wartiovaara, 2007, United Kingdom

#### **Membership or other role in review committee**

##### **Pentti Tienari ,**

MRC grant reviewer, Pentti Tienari, 01.01.2008 → 31.12.2008

##### **Daniel Strbian ,**

Medical Research Council (MRC), Daniel Strbian, 2008 → ..., United Kingdom

#### **Membership or other role in research network**

##### **Pentti Tienari ,**

ECTRIMS council, Pentti Tienari, 01.01.2008 → 31.12.2011

Finnish brain research society, board of directors, Pentti Tienari, 01.01.2008 → 31.12.2010

Neuroscience Center, Univ Helsinki, Pentti Tienari, 01.01.2010 → 31.12.2010

##### **Iiris Hovatta ,**

Management committee member of SYSGENET COST, Iiris Hovatta, 2009 → 2012

#### **Membership or other role in national/international committee, council, board**

##### **Anu Suomalainen Wartiovaara ,**

Evaluation board for Matti Äyräpää prize, Anu Suomalainen Wartiovaara, 2006 → 2008, Finland

Board of Biomedicum Research Programs, Anu Suomalainen Wartiovaara, 2007 → 2008, Finland

Board of Helsinki University Animal Research Centre, Anu Suomalainen Wartiovaara, 2007 → 2010, Finland

Board of United Mitochondrial Disease Foundation, Anu Suomalainen Wartiovaara, 2007 → 2009, United States

Duodecim Foundation, grant committee, Anu Suomalainen Wartiovaara, 2007 → 2009, Finland



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#### MNRP/Wartiovaara

Editorial board of Mitochondrion, Anu Suomalainen Wartiovaara, 2007 → 2011, Netherlands

Grant committee, Anu Suomalainen Wartiovaara, 2007 → 2009, Finland

Board of Neuroscience Centre, Anu Suomalainen Wartiovaara, 2008 → 2010, Finland

Review board for MRC Unit of Mitochondrial Medicine, Anu Suomalainen Wartiovaara, 16.11.2009 → 18.11.2009, United Kingdom

Board of Research Programs Unit, Anu Suomalainen Wartiovaara, 2010 → ..., Finland

Bursar's financial working group, Anu Suomalainen Wartiovaara, 2010 → ..., Finland

Finnish Cultural Foundation, Anu Suomalainen Wartiovaara, 2010 → 2011, Finland

Reviewer of EMBO fellowships, Anu Suomalainen Wartiovaara, 31.08.2010, Germany

#### **Perttu Lindsberg ,**

Executive board member, Perttu Lindsberg, 2002 → 2006, Finland

Member in Committee of Experimental Animal Use, Perttu Lindsberg, 2002 → 2006, Finland

member of organizing committee of Teach Neurology, Perttu Lindsberg, 2002 → ..., Hungary

Member of the committee Current Therapy Guidelines in Stroke, Perttu Lindsberg, 2003 → 2006, Finland

Member of Research council, Perttu Lindsberg, 2004 → 2007, Finland

Editorial Board member of Stroke, Perttu Lindsberg, 2005 → 2006, United States

Head of committee Current Therapy Guidelines in Stroke, Perttu Lindsberg, 2009 → ..., Finland

#### **Timo Pyry Juhani Otonkoski ,**

Council of the European Association for the Study of Diabetes, Timo Pyry Juhani Otonkoski, 23.03.2006 → ..., Germany

Diabetestutkimussäätiö, tieteellinen valiokunta, Timo Pyry Juhani Otonkoski, 01.01.2006 → 31.12.2006, Finland

IDIBELL Scientific Advisory Board, Timo Pyry Juhani Otonkoski, 2007 → ...

Institut de Investigació Biomèdica de Bellvitge (IDIBELL), Scientific Advisory Board, Timo Pyry Juhani Otonkoski, 01.01.2007 → ..., Spain

European Association for the Study of Diabetes, Scientific Program Committee, Timo Pyry Juhani Otonkoski, 01.01.2008 → 31.12.2008, Germany

Hyvä Terveys, Member of Editorial Board, Timo Pyry Juhani Otonkoski, 2008 → 2010, Finland

European Commission, Proposal Evaluation FP7, Timo Pyry Juhani Otonkoski, 10.02.2009 → 13.02.2009, Belgium

Translational Medicine Master's Program Steering Committee, Timo Pyry Juhani Otonkoski, 2009 → ..., Finland

European Foundation for the Study of Diabetes (EFSD), Timo Pyry Juhani Otonkoski, 08.07.2010

#### **Pentti Tienari ,**

DEMANDE DE FINANCEMENT DE RECHERCHE SUR LA SCLEROSE EN PLAQUES / ARSEP appel d'Offres 2005 Apurahan ulkopuolinen ulkomainen arvioitsija, Pentti Tienari, 01.01.2005 → 31.12.2005, France

Nordic multiple sclerosis consortium POHJOISMAAT, Pentti Tienari, 01.01.2005 → 31.12.2005

Suomen Akatemia, arviointi- paneeli, Pentti Tienari, 17.02.2005, Finland

Thesis committee, Medical Faculty, Univ Helsinki, Pentti Tienari, 01.01.2007 → 31.12.2008

Thesis committee, Medical Faculty, Univ Helsinki, Pentti Tienari, 01.01.2009 → 31.12.2010

#### **Iiris Hovatta ,**

Apurahaneelin asiantuntijasihteeri, Iiris Hovatta, 2005, Finland

Biomedicum Helsinki Seminar Series organizer, Iiris Hovatta, 2006 → 2008, Finland

Tutkijan ura -paneelin jäsen, Iiris Hovatta, 2008, Finland

Jäsen, Advisory board, Rosalind Franklin Society, Iiris Hovatta, 2009 → ..., United States

Johdokunnan jäsen, Helsingin yliopiston koe-eläinkeskus, Iiris Hovatta, 2010 → 2013

Jäsen tiedekuntaneuvostossa, Helsingin yliopisto, Iiris Hovatta, 2010 → 2013, Finland





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Varajäsen, Helsingin yliopisto Neurotieteen tutkimuskeskuksen johtokunta, Iiris Hovatta, 2010 → 2013

Varajäsen, Helsingin yliopisto yliopistokollegio, Iiris Hovatta, 2010 → 2013

Varajäsen, MBI-bioinformatiikan maisteriohjelman ohjausryhmä, Iiris Hovatta, 2010 → 2013

#### **Daniel Strbian ,**

Stroke Council, Daniel Strbian, 2009 → ..., United States

#### **Kati Ahlqvist ,**

Lääketieteellisen tiedekunnan tutkimusohjelmayksikön johtoryhmä, Kati Ahlqvist, 15.03.2010 → 31.12.2012

#### **Membership or other role in public Finnish or international organization**

#### **Pentti Tienari ,**

Helsinki and Uusimaa MS society, Pentti Tienari, 01.01.2007 → 31.12.2010

#### **Daniel Strbian ,**

Suomen Neurologian Yhdistys, Daniel Strbian, 2010 → ..., Finland

#### **Participation in interview for written media**

#### **Anu Suomalainen Wartiovaara ,**

Interview in Hyvä Terveys (Good Health) journal, Anu Suomalainen Wartiovaara, 30.06.2009

#### **Pentti Tienari ,**

Lehdistöammainen (Järjestäjä Sanofi-Aventis OY), Pentti Tienari, 24.08.2005, Finland

Lääketieteen toimittajat vierailevat Biomedicumissa, Pentti Tienari, 08.09.2005, Finland

MeSa potilaskerhon kokous, Pentti Tienari, 23.11.2005, Finland

Pohjankyrö lehti (haastattelu lehden uutista varten), Pentti Tienari, 09.2005, Finland

#### **Iiris Hovatta ,**

Ahdistus aisoihin, Iiris Hovatta, 2006, Finland

Biotieteen nuoret lupaukset, Iiris Hovatta, 12.2006, Finland

Ehdokasgeenejä ahdistuneisuudelle, Iiris Hovatta, 2007, Finland

Mistä ahdistuneisuushäiriöt johtuvat?, Iiris Hovatta, 2007, Finland

Mistä ahdistuneisuus kumpuaa?, Iiris Hovatta, 10.2008, Finland

Tuttu tuntematon masennus, Iiris Hovatta, 2008, Finland

Tutustu tutkijaan. Geenitutkija selvittää mikä meitä ahdistaa., Iiris Hovatta, 11.2008, Finland

Kolme viisasta naista, Iiris Hovatta, 04.01.2009, Finland

#### **Daniel Strbian ,**

Helsinki University, Daniel Strbian, 2008 → ...

#### **Participation in radio programme**

#### **Anu Suomalainen Wartiovaara ,**

YLE-Radio, Anu Suomalainen Wartiovaara, 04.06.2009

#### **Perttu Lindsberg ,**

Reseptori: Aivojen kehitys ja toiminta, Perttu Lindsberg, 06.11.2008, Finland

Reseptori: Aivojen äkilliset vammat, Perttu Lindsberg, 13.11.2008, Finland

#### **Pentti Tienari ,**

Interview for YLE radio-1, Pentti Tienari, 10.12.2005

Interview in YLE radio-1, Pentti Tienari, 11.11.2005



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YLE radio-1 Reseptori (Leena Mattila), Pentti Tienari, 11.2005, Finland

YLE radio-1 Tiedeuutiset (Maija Typpi), Pentti Tienari, 10.2005, Finland

**Iiris Hovatta ,**

Periytyykö paniikkihäiriö, Iiris Hovatta, 2007, Finland

Alttiuseenejä löytyy myös skitsofrenian ja autismin takaa, Iiris Hovatta, 04.11.2009, Finland

Johtuuko ahdistuneisuus geeneistä, Iiris Hovatta, 14.10.2009, Finland

**Participation in TV programme**

**Anu Suomalainen Wartiovaara ,**

Läpimurto MTV3 program; a documentary of Wartiovaara's research, Anu Suomalainen Wartiovaara, 01.11.2005, Finland

Interview in YLE-news, Anu Suomalainen Wartiovaara, 03.06.2009

**Pentti Tienari ,**

TV interview 24.8.2005 (YLE-1 evening news), Pentti Tienari, 08.12.2005

24.11.2010 Interview in Finnish television YLE1 A-Studio, Pentti Tienari, 11.12.2010

**Iiris Hovatta ,**

Tutkiva juttu, Iiris Hovatta, 04.2008, Finland

**Participation in interview for web based media**

**Krista Nuotio ,**

Husari haastattelu, Krista Nuotio, 28.01.2008, Finland



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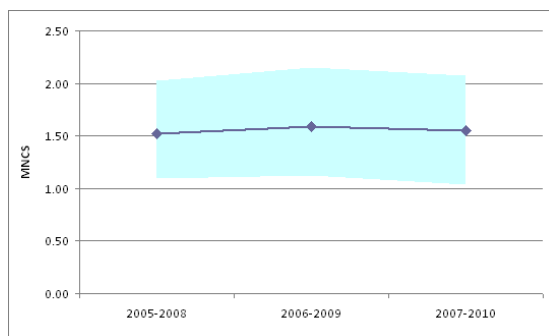
Web of Science(WoS)-based bibliometrics of the RC's publications data 1.1.2005-31.12.2010  
by CWTS, Leiden University, the Netherlands

Research Group: Wartiovaara A

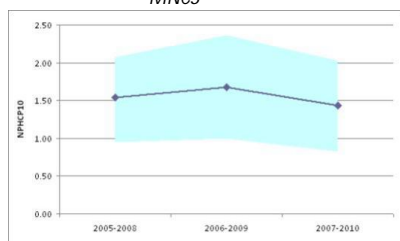
### Basic statistics

Number of publications (P)	214
Number of citations (TCS)	2,210
Number of citations per publication (MCS)	10.70
Percentage of uncited publications	21%
Field-normalized number of citations per publication (MNCS)	1.46
Field-normalized average journal impact (MNJS)	1.57
Field-normalized proportion highly cited publications (top 10%)	1.51
Internal coverage	.94

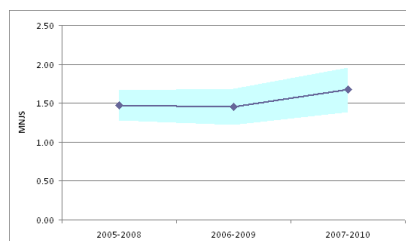
### Trend analyses



MNCS

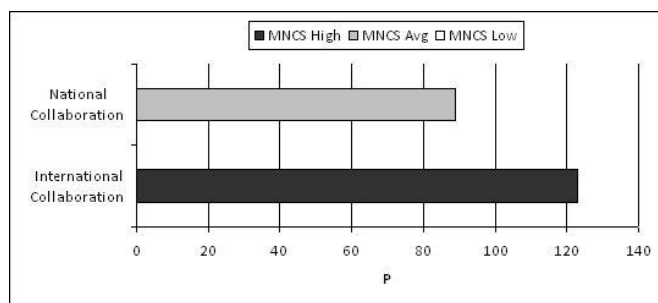


THCP10



MNJS

### Collaboration



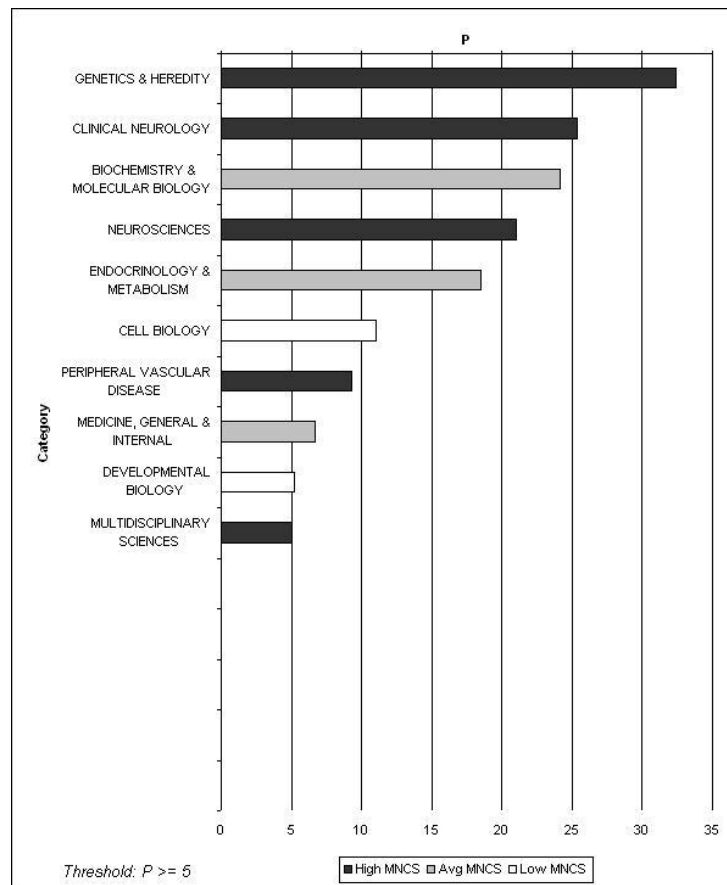
Performance (MNCS) by collaboration type



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Web of Science(WoS)-based bibliometrics of the RC's publications data 1.1.2005-31.12.2010  
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## Research profile



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